

VOLUME XIX

NUMBER 6

DISEASES of the CHEST

OFFICIAL PUBLICATION



PUBLISHED MONTHLY

JUNE
1951

INDEX NUMBER

EXECUTIVE OFFICE, 560 NORTH DEARBORN STREET, CHICAGO 10, ILLINOIS
PUBLICATION OFFICE, ALAMOGORDO ROAD, EL PASO, TEXAS

Entered as Second Class Matter August 18, 1936, at the Postoffice at El Paso, Texas

Under the Act of Congress of August 12, 1912.

Copyright, 1951, by the American College of Chest Physicians



Where the science of treatment is first

ROCKY GLEN SANATORIUM

McCONNELLSVILLE,
OHIO

FOR THE MEDICAL AND SURGICAL TREATMENT OF TUBERCULOSIS

LOUIS MARK, M.D., Medical Director, 677 North High Street, Columbus, Ohio

HARRY MARK, Superintendent

MRS. H. A. PHILLIPS, Asst. Superintendent

HENRY BACHMAN, M.D., Resident Medical Director

MICHAEL L. MICHAELIS, M.D., Res. Phys.

FELIX BACHMANN, M.D., Res. Phys.

L. CHANDLER ROETTIG, M.D., Surgeon

EARL W. DENNY, D.D.S., Attending Dentist

Beautiful Surroundings

Reasonable Rates



THE CALIFORNIA SANATORIUM

BELMONT, CALIFORNIA

Located in the well-known sunny belt of the Peninsula, about thirty miles south of San Francisco. Large park, semi-tropical grounds, walks, especially laid out for graduated exercise.

Not too hot in summer — not too cold in winter.

Physicians on duty day and night — Graduate nurses.

THOMAS E. WIPER, M.D., Director and Consultant in Thoracic Surgery

W. N. TORRE, M.D., Resident Clinician

ALLEN B. LILIENTHAL, M.D., Clinician

SAN FRANCISCO OFFICE: 536 MASON STREET

PHONE DOUGLAS 2-5793



Follow the RADIOGRAPHIC RULE OF THREE



*For uniform
radiographic definition throughout
effective screens-film area...*

Expose with KODAK SCREENS

Available in three types to provide the balance of speed and definition preferred in every situation . . . all Kodak Contact X-ray Screens offer the advantage of the pneumatic-cushion feature. This equalizes pressure throughout the effective area of the screens . . . assures the uniform screens-film contact essential to best radiographic results.

Always:

- 1 Use KODAK FILM—BLUE BRAND
- 2 Expose with KODAK SCREENS—CONTACT (three types)
- 3 Process in KODAK CHEMICALS (liquid or powder)

Made to work together . . . to produce finest results.

OTHER KODAK PRODUCTS FOR RADIOPHOTOGRAPHY No-Screen Medical X-ray Film . . . Photofluor Films for photoradiography . . . Dental X-ray Films . . . Exposure Holders . . . Safelight Lamps and Filters . . . Processing Hangers . . . Electric Chemical Mixer . . . Thermometers . . . Film Corner Cutter . . . Illuminator.

Order from your x-ray dealer

Eastman Kodak Company
Medical Division
Rochester 4, N.Y.

Kodak
TRADE-MARK

New Home of the College



*On July 1, 1951, the Executive Offices of the
American College of Chest Physicians
will be located at
112 East Chestnut Street, Chicago 11, Illinois.*

DISEASES of the CHEST

OFFICIAL PUBLICATION
OF THE
AMERICAN COLLEGE OF CHEST PHYSICIANS

EDITORIAL BOARD

JAY ARTHUR MYERS, M.D.

Chairman

Minneapolis, Minnesota

ANDREW L. BANYAI, M.D.
Milwaukee, Wisconsin

RICHARD H. OVERHOLT, M.D.
Brookline, Massachusetts

CHARLES M. HENDRICKS, M.D.
El Paso, Texas

HENRY C. SWEANY, M.D.
Jacksonville, Florida

ASSOCIATE EDITORS

MILTON W. ANDERSON, M.D.	Rochester, Minnesota
EDWARD P. EGLEE, M.D.	New York, New York
SEYMOUR M. FARBER, M.D.	San Francisco, California
EDWARD W. HAYES, M.D.	Monrovia, California
PAUL H. HOLINGER, M.D.	Chicago, Illinois
CHEVALIER L. JACKSON, M.D.	Philadelphia, Pennsylvania
HOLLIS E. JOHNSON, M.D.	Nashville, Tennessee
EDGAR MAYER, M.D.	New York, New York
ALTON OCHSNER, M.D.	New Orleans, Louisiana
GEORGE G. ORNSTEIN, M.D.	New York, New York
J. WINTHROP PEABODY, M.D.	Washington, D. C.
LEO G. RIGLER, M.D.	Minneapolis, Minnesota

CORRESPONDING ASSOCIATE EDITORS

Donato G. Alarcon, M.D., Mexico
Adrian Anglin, M.D., Canada
Jose Ignacio Baldo, M.D., Venezuela
Etienne Bernard, M.D., France
Miguel Canizares, M.D., Philippine Is.
Manoel de Abreu, M.D., Brazil
Lopo de Carvalho, M.D., Portugal
Sir Alexander Fleming, England
Ovidio Garcia Rosell, M.D., Peru
Fernando D. Gomez, M.D., Uruguay
Affonso MacDowell, M.D., Brazil

Attilio Omodel Zorini, M.D., Italy

David P. Marais, M.D., South Africa
Amadeo V. Mastellari, M.D., Panama
Gustav Maurer, M.D., Switzerland
Andre Meyer, M.D., France
Papken S. Mugriditchian, M.D., Lebanon
Antonio Navarrete, M.D., Cuba
Juda M. Pauzner, M.D., Israel
Hector Orrego Puelma, M.D., Chile
Raul F. Vaccarezza, M.D., Argentina
Raman Viswanathan, M.D., India
Harry W. Wunderly, M.D., Australia

Antonio A. Adames, M.D.
Assistant Editor

Jay Arthur Myers, M.D.
Editor-in-Chief

Arthur Q. Penta, M.D.
Assistant Editor

EXECUTIVE OFFICE
500 North Dearborn Street, Chicago 10, Illinois
MURRAY KORNFIELD, *Managing Editor*

CONTENTS:

INTRODUCTION	615
Andrew L. Banyai, M.D., Milwaukee, Wisconsin	
OPENING ADDRESS	616
A. Omodei Zorini, M.D., Rome, Italy	
APICO-AXILLARY THORACOPLASTY	619
E. Morelli, M.D. and N. Di Paola, M.D., Rome, Italy	
Discussion: Jose Abello Pascual, M.D., Madrid, Spain	
TREATMENT OF NON-TUBERCULOUS SPONTANEOUS PNEUMOTHORAX.	641
Etienne Bernard, M.D. and Andre Meyer, M.D., Paris, France	
ETIOPATHOGENESIS OF SUPPURATIVE DISEASES OF THE LUNGS.....	653
Pavel Lukomski, M.D., Moscow, U.S.S.R.	
BRONCHIECTATIC BRONCHIOLITIS	658
A. Omodei Zorini, M.D. and Luigi Pigorini, M.D., Rome, Italy	
OBSERVATIONS ON PARAGONOMIASIS AT THE QUEZON INSTITUTE....	668
Miguel Canizares, M.D. and Jose Celis, M.D., Manila, Philippine Islands	
CHRONIC CONSTRICTIVE PERICARDITIS (Medical Aspects).....	677
C. L. C. Van Nieuwenhuizen, M.D., Utrecht, Netherlands	
CHRONIC CONSTRICTIVE PERICARDITIS (Surgical Aspects).....	684
M. C. A. Klinkenbergh, M.D., Utrecht, Netherlands	
NEUROGENIC TUMORS OF THE POSTERIOR MEDIASTINUM.....	690
Cesar Rodriguez, M.D., Victor Brito A., M.D. and	
L. Potenza, M.D., Caracas, Venezuela	
PULMONARY MANIFESTATIONS OF SCHISTOSOMIASIS.....	698
Abdel-Aziz Sami, M.D., Cairo, Egypt	
WORLD INCIDENCE OF MORTALITY FROM CHEST DISEASE.....	706
Giovanni L'Eltore, M.D., Rome, Italy	
SIR ALEXANDER FLEMING RECEIVES COLLEGE MEDAL.....	725
FIRST INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST.....	729
COLLEGE NEWS	752
AUTHORS INDEX, January-June, 1951.....	755
SUBJECT INDEX, January-June, 1951.....	760
CONTENTS, Volume XIX, January-June, 1951.....	763

Entered as second class matter, August 18, 1936, at the postoffice at El Paso, Tex., under the Act of Aug. 24, 1912.

Annual Subscription: United States of America \$8.50

Foreign Countries \$9.50

COMPLETE X-RAY DIAGNOSTIC FACILITIES

New

Keleket

KRF-P
Combination



... Eliminates
tubestands

... Saves space
and cost!

SWING from radiography to fluoroscopy or back again . . . effortlessly . . . with a NEW Keleket KRF-P Combination, superbly designed for most diagnostic requirements. 100 MA and 200 MA Combinations are ideal for office, hospital or clinic. Offering the utmost in convenience, the new Keleket Tube Arm replaces the costly, space consuming floor mounted tubestand . . . yet

permits every angulation and adjustment required. A KRF-P Combination can be accommodated and operated with ease in an 8 by 10 room. The multiple advantages of this unit must be seen to be appreciated. Let us give you complete details.

Write for FREE Literature
THE KELLEY-KOETT MANUFACTURING CO.
2144 WEST FOURTH ST.
COVINGTON, KY.

Keleket... The oldest name in X-ray



When writing please mention *Diseases of the Chest*

Announcing: **SOLUTION** of Crystalline

Dihydrostreptomycin

Sulfate Merck

READY FOR
IMMEDIATE
INJECTION



This potent antituberculosis agent—preferred because it minimizes neurotoxic effects, and pain and swelling at the site of injection—now is supplied in "ready-to-use" form. SOLUTION OF CRYSTALLINE DIHYDROSTREPTOMYCIN SULFATE MERCK brings these significant advantages:

- No Refrigeration Required
- Time-saving Economy
- All-round Convenience
- Clear, Colorless Solution
- High Crystalline Purity

AVAILABLE IN:

1 Gram (2 cc.) vials—500 mg. per cc.
5 Gram (10 cc.) vials—500 mg. per cc.

PARA-AMINOSALICYLIC ACID MERCK (PAS) when used in combination with Solution of Crystalline Dihydrostreptomycin Sulfate Merck, prolongs the effective period of chemotherapy by inhibiting or delaying the development of bacterial resistance; has proved effective also as the sole chemotherapeutic agent in selected cases of tuberculosis.

MERCK ANTITUBERCULOSIS AGENTS

SOLUTION OF CRYSTALLINE
DIHYDROSTREPTOMYCIN
SULFATE MERCK

PARA-AMINOSALICYLIC
ACID MERCK
(PAS)

CRYSTALLINE
DIHYDROSTREPTOMYCIN
SULFATE MERCK



MERCK & CO., INC.

Manufacturing Chemists

RAHWAY, NEW JERSEY

When writing please mention *Diseases of the Chest*

Have you tried the AEROHALOR

in postoperative pulmonary infections?

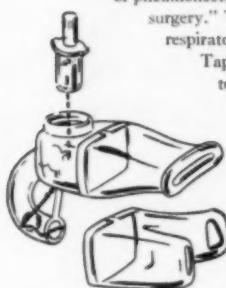


Along with other postoperative measures which tend to prevent the accumulation of secretions and increase the pulmonary ventilation, Taplin, Cohen, and Mahoney¹ report that it also seem logical "to attempt to reduce the existing bacterial flora of the upper part of the respiratory tract by chemotherapy before the operation."

Speaking specifically of penicillin powder inhalation with the AEROHALOR, Krasno and Rhoads² state that "patients with lung abscess or bronchiectasis in whom a thoracotomy or pneumonectomy is to be performed should receive this therapy prior to and following surgery." They also "have found it of great value in patients who have an upper respiratory infection when emergency surgery is indicated.

Taplin et al.¹ state that nearly all organisms infecting the respiratory tract are sensitive to either penicillin or streptomycin and that these drugs in micronized form for inhalation appear to offer definite advantages over other methods of administration. Further, "that prophylactic measures used to prevent the accumulation of bronchial secretions have materially reduced the incidence" of postoperative pneumonia. Against penicillin-susceptible organisms, the AEROHALOR plays an important role. The treatment is simple and effective—the patient simply "smokes" the AEROHALOR like a pipe. For comprehensive literature which discusses indications, dosage and clinical results, write Abbott Laboratories, North Chicago, Illinois.

Abbott



*Trade Mark for Abbott Sifter Cartridge. AEROHALOR and AEROHALOR Cartridge patented in U. S. and foreign countries.

1. Taplin, G., Cohen, S., and Mahoney, E. (1948). Prevention of Postoperative Pulmonary Infections. *J. Amer. Med. Assn.*, 138:4, Sept. 4.

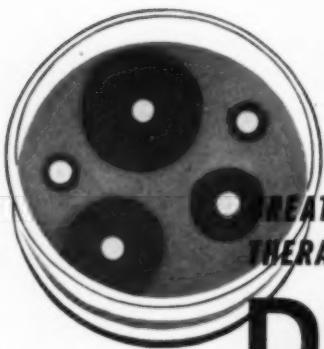
2. Krasno, L., and Rhoads, P. (1949). The Inhalation of Penicillin Dust; Its Proper Role in the Management of Respiratory Infections. *Amer. Pract.*, 1:649, July.

AEROHALOR comes assembled with detachable mouthpiece. Easily interchangeable nosepiece included in package. Disposable AEROHALOR® Cartridge containing 100,000 units of finely powdered penicillin G potassium is prescribed separately—three to an air-tight vial.

Aerohalor®

(ABBOTT'S POWDER INHALER)

In Antibiotic Therapy



**GREATER ACCURACY...BETTER
THERAPEUTIC RESULTS**

DIA-DISCS

TO DETERMINE BACTERIAL ANTIBIOTIC SENSITIVITY

Dia-Discs—diagnostic test tablets—make possible a high degree of specificity in antibiotic therapy. They quickly reveal the specific antibiotic to which a pathogen is most sensitive and the degree of that sensitivity. Particularly in critical or overwhelming infections, when the antibiotic employed must be chosen carefully for optimal results, Dia-Discs can be of outstanding value.

Each set of Dia-Discs contains 24 tablets in two potencies of each of these commonly used antibiotics: Penicillin, Bacitracin, Streptomycin, Chloromycetin* (chloramphenicol, P.D. & Co.), Aureomycin, and Terramycin. A complete diagnostic survey is thus possible for optimal therapeutic results.

Comprehensive instructions for the use of Dia-Discs and for interpretation of the results obtained accompany each package. The directors of your hospital and clinical laboratory have been informed of Dia-Discs and can make this unique service available to you.

C.S.C. Pharmaceuticals

A DIVISION OF COMMERCIAL SOLVENTS CORPORATION, 17 EAST 42ND STREET, NEW YORK 17, N. Y.

When writing please mention *Diseases of the Chest*

THE Broyles BRONCHOSCOPE



The illustration shows a case of suspected tumor of upper lobe of right lung in which x-ray findings were inconclusive. The Broyles Bronchoscope with right angle lens system disclosed a compressed bronchus, and a diagnosis of tumor was made.

ESTABLISHED IN 1900



BY REINHOLD WAPPLER

FREDERICK J. WALLACE, President

American Cystoscope Makers, Inc.

1241 LAFAYETTE AVENUE

NEW YORK 59, N. Y.

Bronchiectasis...?

Bronchiectasis!

Diagnosis can be definite...

"It is to be emphasized that bronchiectasis cannot be diagnosed by routine (plain) x-ray films...diagnosis can be made definitely only by instilling iodized oil into all the branches of the tracheobronchial tree."

Dorner, Ralph A.: *J. Iowa State Med. Society* VI:7 July, 1950.

Lipiodol*

reveals the true diagnostic picture...

Lipiodol readily discloses the actual nature of structural change or of impaired function...because of these unique properties: 1. 40% iodine content firmly bound in poppyseed oil, insures uniform radiopacity. 2. Viscosity characteristics produce clear delineation without excessive "pooling." 3. Exclusive formulation does not involve use of chlorine or its derivatives. 4. Its blandness insures minimal irritation to mucous membranes.

* Lipiodol (Iodized oil, U.S.P.) is the registered trade-mark for the original product created by Lajos. This product alone can bear the name Lipiodol. Made in the U.S.A., E. Fougera & Co., Inc., New York, N. Y. Canadian Distributors: Finant, Ltd., Montreal, Canada.



BAILEY • GLOVER • O'NEIL HEART INSTRUMENTS

Pilling, and only Pilling, supplies the original, authentic Bailey-Glover-O'Neil heart instruments—manufactured with the same skill and precision which have made Pilling a leading name in surgical instruments since 1814.

Order direct from
GEORGE P. Pilling & SON CO.

3451 WALNUT STREET • PHILADELPHIA

A Standing Invitation: When in Philadelphia, visit our new salesrooms. Free parking for doctors in our private lot.

Left to Right:

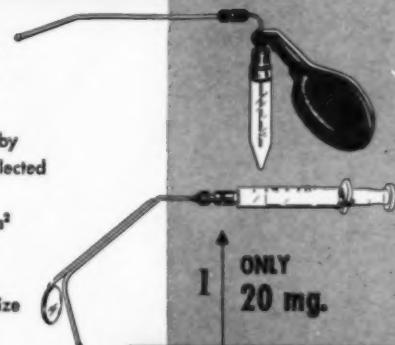
- Bailey-Glover-O'Neil Universal Valvulotome for use in mitral or pulmonary valve stenosis. $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ " and $\frac{7}{8}$ " blade. Malleable handle may be bent to any desired curvature or angle.
- Bailey-Glover-O'Neil Modification of Brock Pulmonary Valve Knife. Sizes $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ " and $\frac{3}{4}$ ".
- Bailey-Glover-O'Neil Commission Swotomny Knife for mitral stenosis. Original Model. Right and left side blade. (Left illustrated.)
- Bailey-Glover-O'Neil Ratchet Type Guillotine Knife for mitral stenosis. One size. Right and left side blade. (Left illustrated.)

Safe, Effective Surface Anesthesia FOR BRONCHOSCOPY AND BRONCHOGRAPHY

Two New Techniques

Application by Micro-Atomizer (Carabelli)¹

Only 20 mg. of Pontocaine hydrochloride produce effective surface anesthesia for bronchoscopy and bronchography, as shown by Dr. A. Carabelli in over 500 consecutive unselected cases. Administered by means of a simple "one-hand" micro-atomizer and mirror-cannula² 8 cc. or less of 0.25 per cent Pontocaine hydrochloride solution plus 8 minims of epinephrine 1:1000 will satisfactorily anesthetize the pharynx, larynx, trachea and bronchi.



Penetrating and Prolonged Surface Anesthesia...

Application by Nebulization (Miller et al.)³

A technic of nebulization (using De Vilbiss No. 40 nebulizer) of Pontocaine hydrochloride has been used successfully by Miller, Mann and Abramson in 50 cases of bronchography and 20 cases of bronchoscopy.

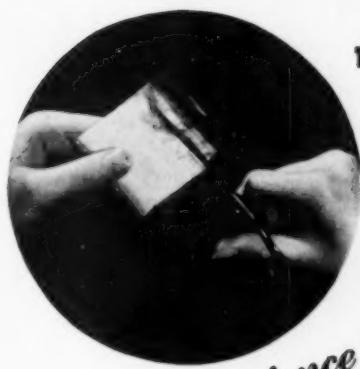
Only 8 cc. of Pontocaine 0.5 per cent solution plus 8 minims of epinephrine 1:1000 are introduced into the nebulizer. The procedure involves the absorption of 10 mg. (i.e., 2 cc. of 0.5 per cent solution) or less of Pontocaine hydrochloride.



1. Carabelli, A.: Diseases of the Chest, 15:532, May, 1949.
(167 cases; balance to be published).
2. Available from George P.illing & Sons, Co., 3431 Walnut Street, Philadelphia 4, Pa.
3. Miller, J. B., Mann, F., and Abramson, H. A.: Diseases of the Chest, 16:408, Oct., 1949.

Pontocaine, trademark reg., U. S. & Canada, brand of tetracaine.

Winthrop-Stearns INC.
NEW YORK, N. Y. WINSTON, ONT.



1 Simply snip off one end of PACKETTE
with scissors.

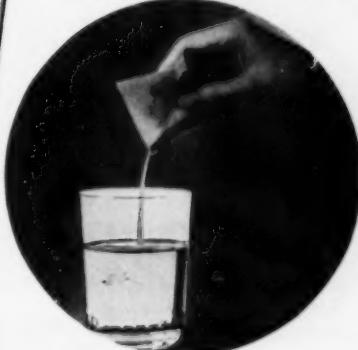
New Convenience in

Hellwig's **PACKETTES**
are easy to prescribe
and pleasant to take



PAS THERAPY

2 Pour contents in 4 oz. of water—
immediate and complete solubility.



The natural purity of Hellwig's Sodium Para amino Salicylate Dihydrate is preserved in individual, moisture-proof, polyethylene envelopes.

With Hellwig's **PACKETTES** the preparation of a single dose of P.A.S. no longer entails measuring powder or counting tablets. No chance of inaccuracy. Each envelope is pre-weighed. Each PACKETTE contains 4.18 grams of *neutral* Sodium Para amino Salicylate Dihydrate (4.18 grams being equal to exactly 3.0 grams of *free* Para amino Salicylic Acid). The difference in weight is due to the molecular weight of the sodium and moisture (dihydrate content).

50 PACKETTES IN A BOX

Hellwig, Inc.

When writing please mention *Diseases of the Chest*

209 E. Chestnut St.

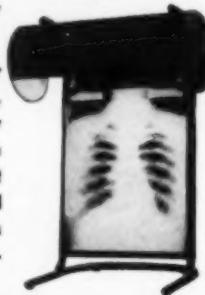
Chicago, Illinois

POWERS X-RAY PAPER REDUCES COSTS 50% OR MORE!



For most routine work, radiographs of high quality can be made at less than half the usual cost with Powers X-Ray Paper. That is why more and more hospitals are using both paper and celluloid base film in their X-Ray departments. Techniques differ only slightly.

Proven in use for over 16 years, Powers X-Ray Paper comes in standard sheet sizes, or perforated rolls for use with the Powers Magazine Cassette.



Let us show you in detail how you can effect substantial savings with Powers X-Ray Paper. Write for complete information and literature.

POWERS X-RAY PRODUCTS, INC.



Group Radiography

Glen Cove, Long Island, N. Y.

GUAYAQUIL ECUADOR

WELCOMES YOU TO THE
NINTH CONGRESS
of the
Union of Latin-American
Tuberculosis Societies
(ULAST)

July 14 - 22, 1951

Complete information may be
secured from:

Dr. Jorge A. Higgins, President
Casilla de Correo, No. 116
Guayaquil, Ecuador

The Council on
Pan-American Affairs
of the
American College of Chest Physicians
will meet at the Hotel Humboldt in
Guayaquil on July 18, 1951.

HEYDEN PENICILLIN and STREPTOMYCIN



LOOK BEHIND YOUR LABEL!



If you are a bulk purchaser of Penicillin and Streptomycin products—for packaging under your own name—it pays to look BEHIND your label for the service and assurance your customers desire.

Can you rely on these antibiotics for constant uniformity and purity? Can you depend on the producer for rigid control, plant facilities and constant source of supply? You can if the Heyden name and trademark are back of YOUR label. As one of the earliest producers of Penicillin on a large scale, Heyden combines manufacturing experience with the extensive research facilities essential to development of new and improved forms of antibiotics.

PENICILLIN PRODUCTS

VIALS: Crystalline Penicillin G Potassium or Sodium; Crystalline Procaine Penicillin G in Sesame Oil with 2% Aluminum Monostearate w/v (cartridges, single- and multiple-dose vials) (also available in fortified form).

Soluble Tablets, Troches and Buffered Tablets

STREPTOMYCIN PRODUCTS

VIALS: Crystalline Dihydrostreptomycin Sulfate (1-gm. and 5-gm.), Dihydrostreptomycin Sulfate (1-gm. and 5-gm.), Streptomycin Sulfate (1-gm. and 5-gm.).

will be pleased to send you Heyden's book and package service of products for pharmaceuticals. Write today for detailed information and your copy of the new brochure "Heyden Antibiotics".

HEYDEN CHEMICAL CORPORATION

393 Seventh Avenue • New York 1, N.Y.



just what the doctor ordered

Dr. X (like everybody else nowadays) is radiation-conscious—only more so. Not content with protective gloves and apron, he wanted his *head*, too, completely shielded during fluoroscopy, spot-film G.I. work, and angiography. Here is what we made for him . . . a sort of welder's helmet, lead-rubber lined, with a lead-glass snap-up eyeshield.

It's perfectly natural that Picker should be the first name to spring to a doctor's mind when he is confronted with *any* x-ray problem. It reflects the confidence earned by years of unsparing effort in all-out service to the Profession.

Picker X-ray Corporation,
300 Fourth Ave., New York 10.



USUAL OR UNUSUAL, YOUR X-RAY NEEDS WILL BE BETTER SERVED AT PICKER

DISEASES of the CHEST

VOLUME XIX

JUNE 1951

NUMBER 6

Introduction

ANDREW L. BANYAI, M.D., F.C.C.P.*
Milwaukee, Wisconsin

An auspicious event unprecedented in the annals of medicine took place in Rome, Italy in September 1950. Scientists, research workers, clinicians and practicing physicians interested in chest diseases gathered in the amphitheaters of the Carlo Forlanini Institute to participate in the transactions of the First International Congress on Diseases of the Chest. A galaxy of brilliant names filled the program; names which are symbolic of new discoveries, original concepts and masterful application in medicine and surgery. From the far corners of the world, new facts, new observations, new techniques were brought together for mutual appraisal and for the ultimate welfare of mankind. Truly, science again proved to be the greatest catalyst, for it united all members of the Congress in the spirit of progressive endeavor. During formal and informal pertinent discussions, views and opinions were exchanged with genuine objectivity seasoned with critical insight and adept competence.

The obvious harmony, understanding and enthusiastic interest on the part of the delegates throughout the many outstanding sessions and events of this Congress are the best guarantee of the success of forthcoming international congresses to be sponsored by the Council on International Affairs of the American College of Chest Physicians.

This issue of *Diseases of the Chest* contains some of the papers presented at the First International Congress on Diseases of the Chest. Other communications from the Congress will be published in future issues.

*Chairman, Scientific Program Committee, First International Congress on Diseases of the Chest, Rome, Italy, September 17-22, 1950.

Opening Address

A. OMODEI ZORINI, M.D., F.C.C.P.*

Rome, Italy

On this significant evening preceding the First International Congress of Chest Diseases, and at this pleasant reunion of the Governors and Regents of the American College of Chest Physicians, allow me to express my pleasure and pride in seeing you gathered here from all parts of the world to speak on and discuss the most modern methods for the diagnosis and therapy of chest diseases, thus enabling you also to enjoy the tranquilizing peace of immortal Rome, cradle of art and history, in this Holy Year that bears witness to the universal homage to the home of St. Peter, the center of Christianity.

Not by mere chance was this selected to be the site of our Congress, after the sad and grave breach in our reciprocal relations imposed by the second world conflagration, where we can renew those personal contacts so useful to the advancement of our knowledge and exchange our ideas on most difficult, tormenting and unsolved problems, and know one another to the very depths of our mind and soul—much better than is possible through an exchange of correspondence from afar; not by mere chance have you come from far distant places . . . it is love that calls, love of truth and beauty, and the severe researcher in scientific problems cannot be indifferent to the fascination of art and poetry, for rising above every faith and every philosophical and religious doctrine he sees in humanism and universality the true flame of life and progress.

Sir Alexander Fleming, seeing many years ago that tiny mold that prevented the development of some colonies of bacteria which for so many other researchers held no scientific value—did he not perhaps experience a flash of genius, did he not compose an act of pure poetry, did he not create an immortal work that grows with time, saving millions of human lives from the fatal sting of serious infectious diseases? And all of us—do we not all endure perhaps hours of intense emotion and trepidation as does an artist or a poet during periods of creative inspiration, when we pursue a clue or observe a new and marvelous fact in the experimental and human field, or when we approach the platform as hundreds of eyes await, scrutinize and follow us in every act and every word,

*Opening Address, Chairman, Committee on General Arrangements, First International Congress on Diseases of the Chest, Rome, Italy, September 18, 1950.

and we feel the tremendous responsibility as well as the intimate joy of teaching, discussing and shaping the young minds of the future researchers and followers of our traditions, teaching them the highest ideals and enthusiasm for our discipline?

We live in an era which favors the progress of our studies. Pulmonary tuberculosis is on the decline everywhere, under the formidable blow of Forlanini's collapse therapy and later surgery of the chest, and recent drug therapy. Pulmonary surgery and bronchoscopy, with their admirable progress in the fields of techniques and anesthesia, have defeated diseases often incurable, such as abscesses and bronchiectasies, and have scored noticeable progress also in bronchopulmonary cancer. Pneumonia has ceased to be a fatal disease because of the unequalled action of sulfa drugs and penicillin. Surgery attacks the heart and vessels with an assuredness, with an audacity unthought of in the past, and corrects valvular defects, opening the heart and substituting its function for brief periods by means of remarkable apparatus, closing, cutting and correcting the defective isthmus of the aorta and the abnormal communication between aorta and lungs in a crescendo of methods and most inspired techniques that border on the miraculous and supernatural. Biological science plunges deeply into pathogenic and physiopathological knowledge so that doctor and surgeon are given more suitable means to judge the patient's resistance, thus increasing his chances for post-operative recovery and his ability to return to his normal everyday living habits and his work.

But it would indeed be a calamity if we, overcome by a sense of pride, were to halt like uncertain mountain climbers, satisfied to look back at perils which have been overcome and who do not extend their glance toward the still distant peaks, but who scrutinize the path and incite the sturdier and younger to proceed with the difficult venture. "*Ars longa, vita brevis*": Our life is but a breath, and it is like the sudden light of a star that is quickly extinguished following a millenniar path, even if this light brightens and illuminates with its real benefits the entire world. Would that this light illuminate the minds of those who rule the world, and inspire thoughts of a real peace, for our belief is that life is sacred and inviolable, above all if tormented by disease, and that our happiness comes of giving a lifebeat to the dying body.

But forgive me for this lyrical outburst, and let us return to the Congress which opens tomorrow—100 scientific reports, picture and film exhibits, sessions on surgery, radiology and bronchoscopy, interspersed with visits through Rome and receptions. This is what we offer you, and we hope you will be pleased, even should it fall short of perfection from many points of view—certainly it cannot

equal your organizational preparation of which we have had a splendid example recently at Copenhagen. "But a sin confessed is half pardoned," and I ask your indulgence in advance for any organizational failings. In compensation we offer you a most enthusiastic and cordial welcome within the frame of this eternal city which stretches before our eyes.

I raise my glass to the health of the gracious ladies who have accompanied you and have honored us with their presence. They are not only the charm and the joy of our homes, the mothers of our children, but they are also our companions at work who understand and follow our efforts, and by us, pass the long night of study into the small hours, often helping and guiding us with their tact and their wisdom. I drink to your health, dear colleagues, to the triumph and achievement of your noble ideals, to the future of the American College of Chest Physicians, and finally to the success of this imminent Congress, for which I am to the greatest degree responsible to you. In fact, it's almost like being in the shoes of a young student about to take an examination (which might be desirable from a certain point of view), and I hope your judgment will not be too severe.

Apico-Axillary Thoracoplasty*

E. MORELLI, M.D., F.C.C.P. and N. DI PAOLA, M.D., F.C.C.P.
Rome, Italy

The operation known to surgeons as axillary thoracoplasty, but which I had named apico-axillary velarium (velario), cannot be understood clearly enough, without the aid of some knowledge of pulmonary physiopathology. In truth, its real name ought to be "surgical atmospheric pneumothorax," for, it is subject to all the laws dictated by my great teacher Carlo Forlanini in pneumothorax therapy.

In my opinion, it is a mistake to consider the lung as an organ which is easily subject to tuberculosis: on the contrary, it is the most resistant against the infection, and we may go so far as to consider it a defensive organ. Like the liver in the abdomen which has the function of destroying toxic substances, so the lung in the thorax has not only a respiratory function, but it destroys the millions of bacterial emboli formed by the white corpuscles, which have phagocytosed bacilli.

If the red corpuscles pass through the capillars slowly, undergoing processes of deformation while the white corpuscles are provided with ameboid movements, it is clear that this progress must come to a stop when, after having phagocytosed bacilli, they loose their ameboid movements and are destroyed by the pulmonary tissue. If the bacterial emboli were not stopped by the lungs, the terminal arteries would not be conceivable. That the lung is endowed with an enormous destructive power is proved by the fact which is not true of any other organ, for it is enough to obtain the retraction of the lung by means of pneumothorax in order to cause, in a short time, the destruction of the numberless bacilli contained in a cavern. The proof lies in the fact, that if a cavern, even in an ample pneumothorax cannot collapse totally owing to the presence of an adhesion which keeps it open, recovery is not possible; while it can quickly take place if the adhesion is cut so as to allow the collapse of the wall of the cavity. These facts are sufficient to prove that in cases in which, owing to a constitutional or acquired weakness, the lung has lost its defensive power, tuberculosis propagates on account of the respiratory trauma which involves the alveolus. *The best operation is the one which reduces the trauma to a minimum.*

*Morelli's Method.

Presented at the First International Congress on Diseases of the Chest,
Rome, Italy, September 17, 1950.

We shall now consider:

- 1) The bronchial tracts with physiopathological, pathological, and functional stenosis.
- 2) The powerful inspiratory muscles, which can increase their power whenever a bronchial or bronchiolar stenosis hinders the entrance of the air in the alveoli.
- 3) The alveolus which has its place in between these two opposed forces.

The alveolar wall, which is very thin, but exceedingly elastic, is not damaged because the respiratory dilatation required is inferior to its power of dilatation. But whenever the conditions allowing the dilatation are missing, the alveolar wall is seriously damaged.

If, owing to bronchial stenosis, air does not penetrate sufficiently in the alveolus during inspiration, the alveolar wall will be excessively stretched, but at least it will possess a defence deriving from the elasticity of the residual air, which, owing to its dilatability allows a certain eccentric dilatation of the whole alveolus. But, if the air has been totally expelled, or if the alveolus is full of an exudate of a nature not subject to dilatation, the eccentric dilatation of the alveolus will be missing and substituted by a linear traction. The trauma would not be very serious if the damaged part were surrounded by aerated alveoli, inasmuch as they would have the function of an internal pneumothorax, and also if the pleura were normal and allowed the lung's inspiratory dislocation, for in such case, the traction on the damaged part would be indirect.

If, instead, the pleural adhesion were in correspondence with the lesion and the damaged part were full of exudate and pushed its way up to the pleura, the dilatatory trauma would act on the alveolar group, it would increase the lesion and form the cavity. For these reasons, the ideal treatment is pneumothorax, because the endopleural gas, on account of its dilatability, which is superior to the retractile force of the lung, eliminates the respiratory trauma, and, by allowing the retraction of the elastic tissue, gives complete rest to the lung. For the same reason, the best operation will be the one which follows more strictly the laws dictated by Forlanini in the actuation of the pneumothorax.

If mucous and catarrhal stenosis of the air passages are present, the alveolus contains none or a very small quantity of air, and so loses the possibility of dilating itself, the power of the inspiratory muscles increases in proportion with the entity of the stenosis and therefore the trauma on the alveolus becomes very strong. This fact is proved by the presence of a pleural adhesion,

which even in the course of an ample pneumothorax, keeps open the cavity and increases its volume, so that it could be well compared to an alveolus. The cutting of the adhesion in the presence of pneumothorax permits of the retraction of the lung and the cessation of the respiratory trauma, and concludes with the recovery of the lung. It is natural to admit that when an adhesion can not be cut for want of a pneumothorax, the same result can be obtained by cutting its parietal implantation. *The removal of the ribs above the adhesion in order to render the wall flexible, is equivalent to cutting the adhesion itself.* It is necessary though, that the wall remain flaccid to the point of allowing the retraction of the lung.

Without entering into the discussion of the various methods bearing the names of great surgeons, I think that I may assert that none of them answers theoretically to the presuppositions of the pneumothorax, for, in all, after a more or less long post-operative period, in which the wall remains flaccid and fluctuating, the bone stumps come nearer each other, the bone wall is re-established, and a rigid ring forms itself around the lung. Instead of the elastic retraction of the lung, a rigid compression is achieved, which means that the damage already mentioned is accentuated, that is to say, increase of the bronchiolar stenosis and elimination of the endoalveolar gas. When the wall is flexible, the same mechanism as the pneumothorax takes place, for, during inspiration, instead of a dilation of the lung there is a retraction of the wall. The fluctuating thoracic wall represents only a dividing wall, which separates the lung from a very ample pneumothorax represented by the atmosphere. It is the atmospheric pressure, which, by weighing on the flaccid wall, allows the pulmonary retraction. Therefore, I have said that the operation, which I have named "apico-axillary velarium" might be called more properly "atmospheric pneumothorax." It represents nothing more than the enlargement of the supraclavicular region; the retraction of this space provokes sclerosis of the apical lesions.

In every thoracoplasty, the great improvement or recovery is to be had during the first months after the operation, when the wall is still fluctuating. When it becomes rigid, the improvement usually comes to a stop. Even the smallest inspiratory dilatation has an injuring effect on the lesion, for the above mentioned reason, that the alveolus is void of air and the stenoses are increased. Also if the thoracic wall were motionless there would always be the damage due to the traction from the diaphragm. When the wall is flexible, even an ample respiratory dilatation provokes a minimum trauma on the damaged part, while in a rigid wall, in which the alveoli cannot dilate, a minimum dilata-

tion induces a strong trauma. These theoretical concepts have proved true in practice.

Operating on the lesions of the upper lobe, the first three ribs are totally eliminated, as well as a good part of the fourth and of the fifth. They must be all disarticulated so as not to leave harmful recesses. The axillary way was chosen for three reasons. The first because it respects the muscular mass and therefore renders possible an intervention, which proves quick and without trauma, or blood loss. Second, because the operation performed on the middle of the rib, makes it easy to remove the rib totally from the cartilage to the articulation. Third, because this incision, which does not damage the muscular mass, avoids all thoracic deformities and the wound remains hidden under the armpit.

To be able to avoid an operative scar, especially in women, is important. In order to perform the operation properly and quickly, I have invented a series of instruments, which Professor Di Paola will describe to you and which I hope you will see in practice, if you will do me the honor of assisting at one of my operations. The intimate and continuous collaboration with surgeons, and especially with Professor Di Paola, has made it possible to construct these instruments able to eliminate the operative difficulties, which were very serious in the beginning.

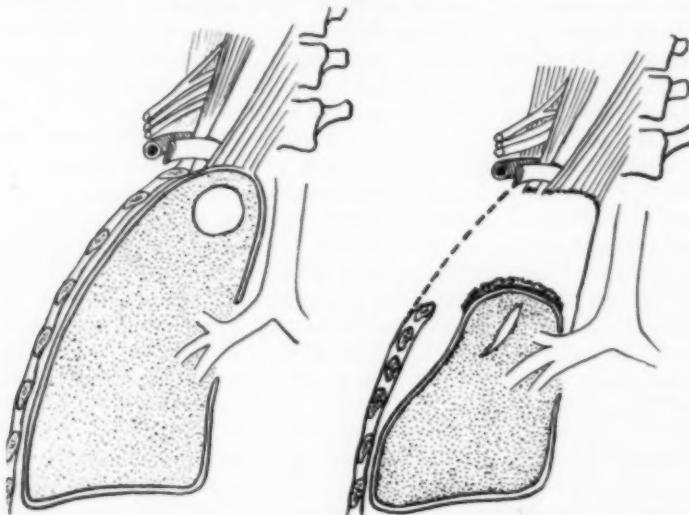


FIGURE 1

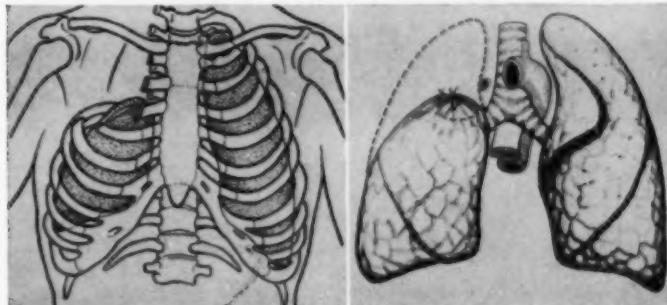
FIGURE 2

Figure 1: Vertical cavern scheme, before the intervention, by axillary thoracoplasty—Figures 2, 3 and 4: Schematic aspect of pulmonary collapse, obtained after apical thoracoplasty, by axillary way, with resection of five ribs.

The disarticulation of the first rib was thought to be impossible: on the contrary, it is the rib which can be disarticulated most easily. The lowering of the apex, owing to the detachment of the mediastinal pleura, allows a concentric retraction of the lung, which facilitates recovery. The idea of a pulmonary hernia, derived from the fluctuating wall, was put forward; in several hundreds of cases I have never been able to see it. This is due to the fact that the muscular conglomeration has been totally maintained. To avoid the formation of an hernia it is sufficient to maintain an elastic compression on the operative field for about 10 days. It has been said that the apex could not be lowered through the axillary way. On the contrary, we lower it systematically down to the pulmonary hilus. If at the beginning some difficulty should arise in the disarticulation of the first rib, the rib could be cut near the articulation by means of a special instrument which I have constructed. Owing to the fact that the apex must be lowered a good deal below the first rib, no damage would result from the missing disarticulation.

The technical ability of Professor Di Paola has made it possible to obtain the formation of an extrafascial pneumothorax below the hilus; this has a double aim: First, of eliminating the angle formed by the lung which adheres to the rib situated below the removed ones. Second, of constructing a pneumothorax cavity, which, if needed, can be refurbished and bring about the recovery of lesions below the fifth rib.

With the aim of hindering rib regeneration, I once used 10 per cent formalin. Now, I prefer the destruction of the anterior periosteum by thermocautery, for I find it to be sufficient. The only possible complication, which is now rare, is aspiration bronchopneumonia. Its cause is traumato-pneumonia. It can be avoided, first of

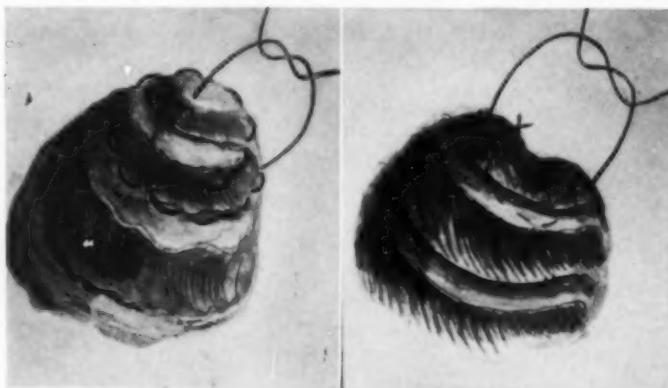


Figures 3 and 4: Schematic aspect of pulmonary collapse, obtained after apical thoracoplasty, by axillary way, with resection of five ribs.

all, by means of a perfect anesthesia, under which the patient does not utter those lamentations which cause deep inspirations, and secondly by placing tightly compressed gauze between the costal wall and the lung during the operation. In this way traumatopnea can be avoided and with it inspiration bronchopneumonia. The most difficult part, which is responsible for the late result of the operation, is the lowering of the apex and its fixation that prevents its rising again later, and the complete elimination of the cavities.

Professor Di Paola will describe to you in detail the surgical proceeding; I only wish to assert that the described method has rarely shown the existence of cavitary residues, even after a good many years lapse. I have devised an easy method for the elimination of big caverns. If the bronchus is open, the upper wall of the cavern is pushed against the lower wall and the two margins subsequently sutured. If the bronchus is closed, I aspirate the air from the cavity with a syringe; the invagination happens spontaneously while the air is being aspirated. It is well to inject streptomycin in the cavity. This method serves not only for closing the cavity, but also for rendering its postoperative insufflation impossible. (It is the same thing that happens when a rubber ball is compressed so that the upper wall is pushed against the lower). The improvement is surprisingly quick. The patients leave their beds after a week, and the clinic after about three weeks. Mortality, in cases that do not surpass the limits of operability, is nil.

The operation is so safe that now it is applied even in desperate



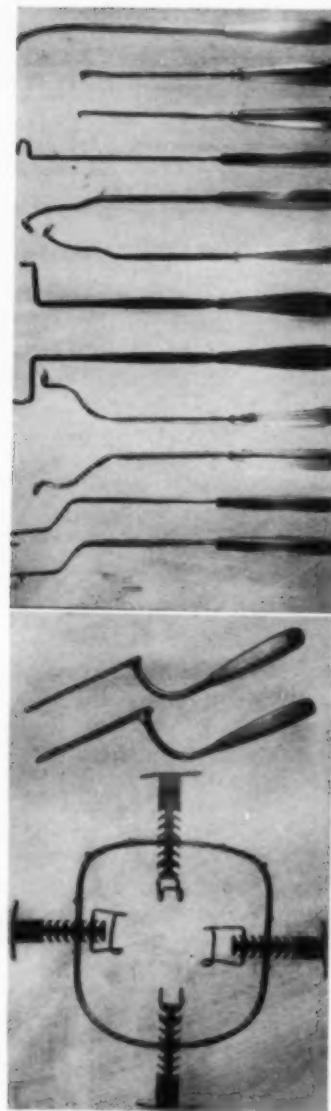
Figures 5 and 6: Apex invagination by continued helicoidal suture, through the periosteum and the intercostal muscles.

attempts with the certainty of not damaging and of bringing about an improvement. In cases of biapical lesions, we operate with double "velarium" obtaining good results; often we operate on patients with contralateral pneumothorax. The trauma is so slight that there is no absolute limit to age. Two years ago, I sent to Professor Di Paola a 63 year old lady for operation; her systolic pressure was 230, and she was diabetic. The result was excellent and continues so. I have several patients in very good condition three or four years after the operation.

The indications are those of the ordinary intrapleural pneumothorax. They go from the acute feverish exudative forms to the big excavations. The operation, of course, is surer in sclerotic forms, with or without excavations. In bilateral cases, I operate first with apico-axillary "velarium" on the side where the lesion is apical and minor, subsequently, if it is possible, I perform pneumothorax on the other side. I have described the utility of the operation that I propose. My great admiration for those surgeons who have suggested other types of operations prevents me from being exclusive and absolute in my assertions. I myself have at times performed (and I still advise) other operations. Sometimes, when there is a downward progress of the morbid form, I suggest the posterior intervention. Each method has its good points; the clinician's task is to study its application in the different cases.

My teacher, Professor E. Morelli, has explained to you the fundamental ideas, which have guided him in the conception of the apico-axillary thoracoplasty. He has clearly demonstrated how, thanks to this intervention, by means of the technique of which I shall describe in detail, it is possible to perform, at one stage, operation on the lung with minimum trauma. The operation consists of the total extirpation, through the axillary way, with disarticulation in correspondence with the column vertebral, of the three first ribs, and in the partial postero-lateral resection of the fourth and fifth, which are also disarticulated (Figure 1) in the lowering of the pulmonary apex, and the subsequent fall of the upper lobe, which, having been freed by the different forces of traction, lowers itself to the level of the last resected ribs. Afterwards, the extrapleural or extrafascial detachment of the lung is effected beginning from the fifth posterior costal arch downward, until the diseased lung is completely freed (Figures 2, 3 and 4).

The extrapleural way is followed in case of central pulmonary lesions, and the extrafascial in case of big sub-pleural caverns.



Figures 7 and 8: Instruments invented by Professor Morelli for thoracoplasty.

The detachment is facilitated by the resection of the fifth intercostal nerve and of the posterior tract of the intercostal muscle. Such detachment regards, as a rule, the first two or three ribs below the inferior limit of the thoracoplasty, in their latero-posterior segment. The anterior obliquity of the ribs makes it possible for the cavity obtained to be on the same level, both in front and behind. Lastly the so-called "fixation of the lung" is effected; that is to say, the permanent lowering of the apex is provoked by invaginating the upper part of the lung. To this effect, a continuous helicoidal suture is effected on the periosteum and the intercostal muscles, which have remained adherent to the lung. Thus, a real parenchymal retraction is obtained (Figures 5 and 6). The air tightness of this big cavity, thus created, is perfectly realized with the marginal suture of the muscles serratus major and pectoralis minor. This cavity, in the immediate post-operative period, is insufflated, if necessary, after the effusion has been drained.

Thus, an homogenous, hypotensive collapse of the diseased lung is obtained, which is the equivalent of an elective pneumothorax, and has been named most properly by Professor Morelli "surgical atmospheric pneumothorax."

Operative Technique

The technique of the operation is bound and connected chiefly to the particular type of instruments, which make it possible to deperiostize and subsequently remove completely under sight, the first ribs from the costo-vertebral articulation, to the sternal cartilage. The instruments used include four types: 1) Retractors, 2) Raspatories, 3) Costotomes, 4) Disarticulators.

1) The RETRACTORS include two types: *a selfretaining retractor* (Figure 7) constituted by a quadrangular base, provided with several projections and four branches of traction. This simple instrument permits of a traction in every sense and with different degrees so as to give an ample view of the operative field. It is, above all, practical, on account of the minimum trouble it gives the operator, and it proves so useful during the operation, that, according to E. Morelli, it does the work of an assistant. *Two trowel retractors*, one with a large and one with a narrow shovel (Figure 7b), when properly maneuvered by an assistant, make it possible for the rib to be seen along its latero-posterior length.

2) The RASPATORIES are numerous and of different shape; each of them has a special function (Figure 8): *The straight raspitory* is used to uncover the ribs. *The forked raspitory* is used for freeing the lower margin of the middle portion of the rib. *Hooked raspitory* is useful for freeing the upper margin of the

middle portion of the rib, but is used principally for the removal of the scalenus from Lisfranc's tubercle. *Doubled curved raspatory* is curved at the far end so that the back portion of the rib, where it shows an accentuated arch, may be easily deperiostized. *Angular raspatories* are useful for freeing the front portion of the rib from the periosteum.

3) COSTOTOMES have the function of sectioning the rib at a distance from the line of incision, beyond the line of vision, and without the fear of damaging vessels, nerves, or the pulmonary parenchyma. *Bayonet costotome* is used for sectioning the front portion of the first rib, the nearest possible to the chondro-sternal articulation (Figure 9). *The curved guillotine costotome* is useful for deep sections; it is especially used when one does not wish to disarticulate posteriorly the first rib, but to cut it posteriorly in the immediate vicinity of the costo-vertebral articulation. *The long hatchet costotome* makes it possible to cut without difficulty any costal portion, on account of its long lever arm.

4) The DISARTICULATORS are of two types: *A costo-transverse disarticulator* which owing to its curvature and the semilunar surface at its end, may be inserted in immediate contact with the articular capsule of the costo-transverse articulation. The instrument, properly manoeuvred as a lever, determines the rupture of the capsule. Such manoeuvre is rendered easier when the articular

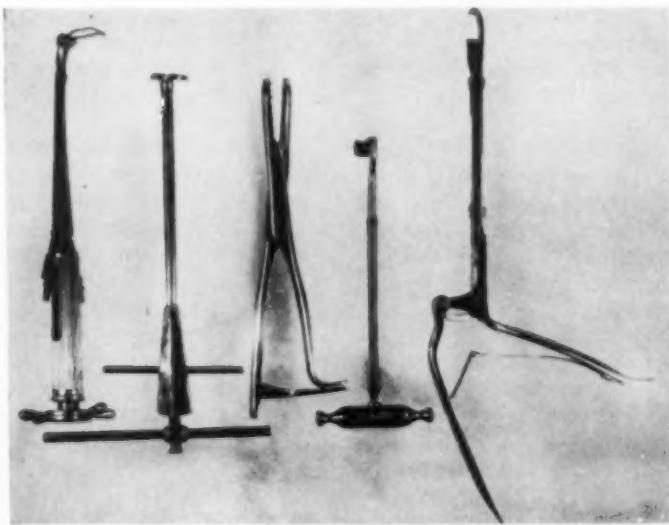


Figure 9: Instruments invented by Professor Morelli for thoracoplasty.

capsule is extended, by excercising traction on the proximal end of the latero-posterior stump of the rib by means of a special forceps. A *torsion disarticulator* has the function of removing the rib from the thin costo-vertebral ligaments. This instrument gives a turn of 360 degrees to the costal capitulum, thus facilitating the complete disarticulation of the rib.

Position of the patient: The patient is placed in dorsal position, slightly raised and inclined on the opposite side of the operator. This position is obtained by slightly rotating the operative bed. The arm, with bent forearm, must be kept in abduction and left free for the necessary movements during the operation (Figure 10).

Anesthesia

The patient must be given a preanesthetic. We generally use Dilaudid-Scopolamin in two injections, respectively one hour and a half, and half an hour before the operation. Owing to the fact that patients affected by lung diseases are accustomed to opiates as cough sedatives, we have never observed the violent disturbances and incidents, at times fatal, which have been described by general surgeons to this kind of drug, whenever the doses are not exactly proportionate to the patient's weight. Just before beginning the operation, truncular 1 per cent novocaine anesthesia of the first fifth or sixth intercostal nerves is effected, accompanied by cutaneous and subcutaneous anesthesia along the sub-axillary line of incision; or else *peridural anesthesia*, according to Dogliotti's method (2 per cent novocaine) in correspondence of the first or second vertebral body.



Figure 10: Starting point for axillary thoracoplasty. By this way the costal plane is reached, without sectionizing any muscle.

Technique of the Operation

The cutaneous cut follows the middle axillary line, as the incision starts from the apex of the axillary fossa and descends downward parallel with the external margin of the *dorsalis major*, for a length of 8 to 10 cm. After having cut the cutis and the subcutaneous tissue, one passes through the layer of adipose subaxillary tissue so as to obtain convenient and useful access to the thoracic wall from the first to the fifth rib, in correspondences with the insertions of the *serratus major*. The autostatic retractor with its branches in traction is then put into action (Figure 11) so that, on account of the ample view obtained, it is possible to come into contact with the different ribs without cutting the muscles. Thus, the start is given for the liberation of the first rib through the periosteum. The operation would be easier, if the removal began from the third rib and ascended to the second and first. Usually, one prefers to reverse the order by beginning from the first rib and subsequently descending to the lower ones, for, in this way, the retraction of the lung is more gradual and the organ is not submitted to manual maneuvers. Thus operative traumatopneia, which is the first cause of post-operative complications, especially of aspiration bronchopneumonia, is diminished.

The first rib is rendered visible by sliding the trowel retractor on its upper surface below the pectoral muscles, till its point reaches Lisfranc's tubercle. Thus the nervous and vascular elements of the axillary fossa are protected. After having cut the

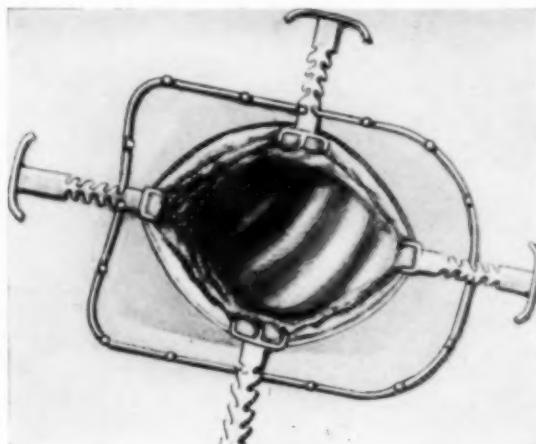
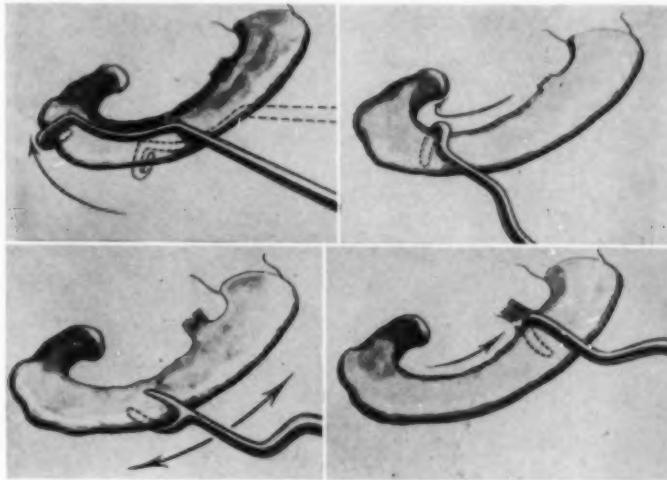


FIGURE 11

periosteum, and detached it for a certain length from the upper surface by means of the blunt periostotome, a small portion of the front surface is detached so as to render possible the action of the forked hook, which is inserted between the periosteum and the bone (Figure 12a). By exercising lateral movements it is possible to free a good length of periosteum from the middle third to the sternal cartilage. The same procedure is followed for the posterior margin. The beak of the hook respiratory passes between the periosteum and the lower surface of the rib, and, by impressing lateral movements to it, keeping the hook in traction, the insertion of the anterior scalenus is detached from the Lisfranc's tubercle, and it is possible to arrive anteriorly to the sternal cartilage (Figure 12b).

The total freeing of the rib is completed up to the vertebral column by employing the double curvature hooks (Figure 12c). A gauze pack is therefore placed under the first rib, thus freed. The detachment of the periosteum from the second and third ribs is then effected; also in this case, the ribs are totally freed, first with the forked and hooked respiratory, subsequently the right angled respiratories are used, which make it possible to free, without any danger, the anterior tract of the rib up to the cartilage. At last, the posterior margin of the rib is completely freed up to the column, by means of double curvature hooks, with the aid of trowel retractors.



12a: Lower Picture.
12c: Upper Picture.

12b: Lower Picture.
12d: Upper Picture.

For the fourth and fifth rib, the same proceeding is followed. The detachment at the periosteum stops anteriorly, respectively in correspondence with the anterior and the posterior axillary line, while posteriorly, as with the other ribs, it arrives up to the vertebral column. At this moment the lung appears almost completely freed from the skeletal support (Figure 13); therefore, the costal resection is effected.

The fifth and the sixth ribs are cut anteriorly with the long *hatchet costotome* in correspondence with the posterior and anterior axillary line; the third and second, in correspondence with the cartilage anteriorly, and on the posterior axillary line laterally; the first and last in immediate contact with the sternal manubrium, using in this case, the *bayonet costotome*.

Therefore, the posterior costo-vertebral disarticulation of all the ribs, which have been freed, is effected. The two trowel retractors are applied, and precisely, the one with the large shovel, along the lateral surface of the rib, and the one with the narrow shovel, along the upper margin. Then, using the special forceps, the free tract of the rib is grasped, and, while with the hand a strong traction is exercised outwards and upwards so as to separate the rib from the periosteum, the other hand pushes gently the long costo-transverse disarticulator, with a concave end, between the rib and the large shovel, till it comes in contact with the articulation. The instrument, being properly manoeuvred, determines the rupture of the articular capsule. It is easy to recog-

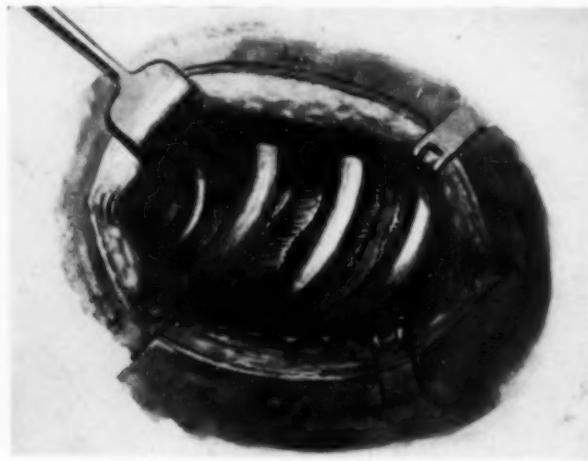


FIGURE 13

nize the opening of the articulation, on account of a characteristic cracking noise (Figure 14).

The disarticulation and the freeing of the posterior end is completed by introducing deeply the torsion retractor, which arriving in proximity of the costal capitulum with a 360 degree rotation eradicates the rib. After having effected these manœuvres of disarticulation, the first part of the operation may be considered ended. Subsequently, the lung must be freed from its apical and mediastinal adhesions.

After having disarticulated posteriorly the first five ribs the operator renders the apical and paramediastinal regions more approachable, by having an assistant lift the soft parts of the anterior axillary wall, by means of a Mikulicz retractor, or, better still, with a suitable spatula in the form of a large V. The field is moreover enlarged if the assistant, while using the retractor, exercises at the same time a traction of the patient's arm, by bringing it upward and outward. After thus having exposed the field, the operator, while keeping the lung pressed downward with the aid of a small spatula, tries to free posteriorly, with the scissors, the different muscles and the corresponding intercostal



Figure 14: Schematic picture showing the manœuvre for the posterior costal disarticulation.

nerves belonging to the disarticulated ribs. The freeing and immediate cutting begins from the lower elements and proceeds towards the higher ones.

While this procedure is easily performed with regards to the fifth, fourth and third neuro-muscular element it is more difficult with the second. After having cut the second intercostal nerve, and then the muscle, the apical adhesion of the lung appears greatly limited. This is the moment in which the maneuvers prove more difficult. The abducted arm and the "V" retractor render the axillary and subclavian vessels perfectly visible, and for this reason the maneuvers, which will be effected later, although delicate, do not offer those risks, which are mentioned by several authors with regard to Semb's extrafascial apicolysis. While performing the detachment of the apex through the axillary way, it is always possible to follow the direction of the vessels and thus direct the detachment without fear or danger.

By continuing to exercise pressure downward with the pledget above, one tries to provoke a certain relaxation in the tissues, which are adherent to the somato-transverse zone of the first thoracic vertebra. By this procedure, the intercostal nerve is placed in view, surrounded by thick fibrous strips. After having cut it towards the center, the first intercostal muscle also gives way, and may be easily cut paravertebrally. After these important tractions have been eliminated, the apex is, without difficulty, pushed downward. Thus the transverse-vertebral and the pleuro-vertebral ligaments, which are usually lax and easily sectioned, are put into view. However, in cases of retractile chronic apical phthisis, one may observe in the place of the removed ligaments a large connective magma, which is not easily elongated. In this case, the pressure

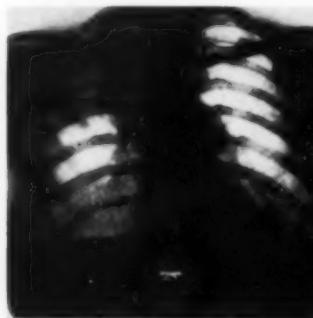


FIGURE 15

*Figure 15: Right upper lobe with a big cavity.
Figure 15a: Five years after axillary thoracoplasty.*

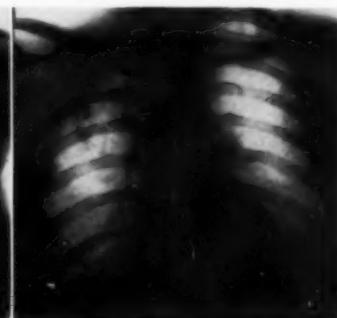


FIGURE 15a

exercised by the pledget, though fairly hard, is not sufficient to overcome this callosity. It is therefore necessary to free and subsequently to section it. Keeping an eye on the subclavian vessels, a long handled scissor is used, taking care to keep very near to the parenchyma, which will not be easily damaged, owing to the particular pleural cortical thickness.

Thereafter the detachment of the lung from the mediastinum is effected quickly and smoothly by exercising only slight pressure. This region, like the surface of the vertebral bodies, offers a good detachment surface. As may be seen from the foregoing description, we have not mentioned ligatures of the vessels or of the intercostal muscles, before their section. As a matter of fact, this has proved to be superfluous inasmuch as usually the intercostal vessels, by passing from the tension phase in which they were kept by the ribs, to the flaccid phase, become automatically hemostatic. If, however, as is sometimes the case, this mechanic hemostasis does not happen, it becomes necessary to effect the vessel's electrocoagulation. In any case, it is sufficient to perform a brief compression with a pledget, so as to obtain the collapse of the vessel's walls which are thin and elastic. After having effected this apicolytic, the apex is fixed to maintain the lung's lowered position indefinitely.

The operation of apico-axillary thoracoplasty frees the collapsed lung from any adhesion, both natural and artificial, with the thoracic walls. The permanent lowering of the apex is obtained by performing a sort of invagination of the "culmen apicis." This can be effected by constructing a continuous helicoidal suture, inside which the apical parenchyma introflects, along the direction of the periosteum and the intercostal muscles adherent to the viscus. Thus the lesion remains blocked and the approach

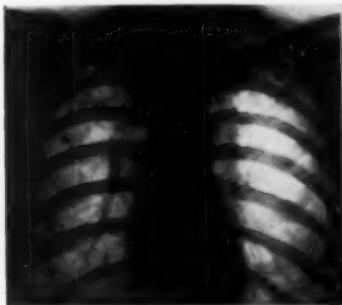


FIGURE 16

Figure 16: Ulcero-fibrous biapical tuberculosis.
Figure 16a: Late result of axillary bilateral thoracoplasty.



FIGURE 16a

and apposition of the cavitary walls is facilitated. In the end, a drainage tube is applied and operative breach is closed. This last part of the intervention requires great care, in order to assure complete air tightness to the cavity. For this reason it is best not to let the drainage pass from this breach, but to effect a small incision, and let the rubber tube pass through the serratus major.

Thus, after having removed the drainage at 48 hours, the operative breach proves resistant to eventual air injection in the cavity. The suture of the wall is thus effected; after having removed the selfretaining retractor, the postero-superior margin of the serratus major, the axillary fat and the lateral border of the pectoralis minor are sutured together. A subsequent catgut suture brings the margin of the serratus major and the pectoralis minor nearer together, so as to obtain a complete closing of the extra-fascial cavity. The subcutaneous tissue is then sutured, together with the axillary tissue above. Lastly a skin silk suture is effected.

Postoperative Treatment

In order to avoid phenomena of traumatopnea, a compressive bandaging is effected, preferably with the interposition of a small elastic cushion, on a level with the sub clavian fossa, which, especially during the first day after the operation, appears excessively mobile and fluctuating. In this way, one may obtain gradual adaption and slow retraction of the lung, without fear of damaging traumas. The patient is kept in half sitting position to ease breathing and drainage of the extrafascial cavity. It is especially advisable to have the drainage tube communicating with the aspirating bottle. Thus it is possible to avoid the stagnation of the sero hematic fluid, which usually forms in the residual cavity during the first days following the operation, and, at the same time, the restriction of the thoracic walls is facilitated. Opiates administered in generous quantities, and bland analectics, are useful as sedatives for cough and dispnea, and for sustaining the circulation.

Indications

This operation presents a large field of application in comparison with other posterior thoracoplasties, for, the collapse is, without doubt, more homogenous and superior to all others. It is scarcely traumatizing, because the muscles of the thorax are not damaged, the vital capacity is not modified, and the cardio-vascular system does not suffer. The danger of homolateral basal aspiration or of countralateral diffusion is reduced to a minimum, owing to the gradual concentric collapse of the apex, freed from all kind of traction. Owing to this fact, we have been induced to abandon

completely the paralysis of the diaphragm, thus permitting the functionality of the lower parts of the lungs, which are generally free of lesions. Therefore, the forms of pulmonary tuberculosis, which are localized in the supra-, retro- and subclavicular regions (Figures 15 and 15a), both of an exudative or of a productive nature, acute or chronic, unilateral or bilateral, with small excavations or large caverns, may all be treated with the axillary thoracoplasty method.

Results: The statistics of years, the last three years, that is to say, after the advent of antibiotics, are very favorable. With reference to the patients operated in the Forlanini Institute, and those operated in the Morelli Clinic, the results are as follows: 72 per cent complete clinical and radiographic recoveries; 15 per cent partial results, with an improvement of the general conditions; 10.6 per cent showed evolution of the disease, after the operation or later (repeated hematogenous dissemination, homo- or contralateral bronchogenic diffusion).

Operative Mortality: We may assert that the procedure does not show any operative mortality. There have been cases of death due to the operation (during the first two months), 2.4 per cent. The pathological examination of the deceased patients has always shown degeneration of the myocardium. These deaths might have been avoided if we had been more careful in selecting patients.

This brief review of the anatomo-clinical forms, which may be treated with axillary thoracoplasty shows clearly that the field of application of this operation has been extended to a great number of cases of tuberculosis involving the upper third of the lung. The constant results obtained show us that apico-axillary thoracoplasty is destined to a wide application, owing to the numerous tuberculous forms of the lung, which it can cure, to the possible association with other homo- or contralateral collapsotherapeutic operations; to the very reduced number of late complications, and lastly to the integrity of the form and shape of the chest which results.

SUMMARY

Morelli: The author illustrates a type of thoracoplasty operation effected through the axillary way, which consists of freeing completely the upper lobe by eliminating the first five ribs, by means of posterior disarticulation.

Thus an homogenous detensive and concentric collapse is obtained at the level of the affected side, equivalent to an elective extrafascial pneumothorax (atmospheric pneumothorax).

Through this intervention, any tuberculous lesion localized in the upper lobe, either with a prevailing exudative or productive

character, with acute or chronic evolution, unilateral or bilateral, micro-ulcerative or widely excavated is eligible for treatment.

Di Paola: The intervention carried out by means of instruments conceived by Dr. Morelli, consists of the total exeresis, through the axillary way, of the first three ribs, their disarticulation from their vertebral attachment, and of the resection of the latero-posterior segments of the fourth and fifth rib, which are also disarticulated; of the lowering of the apex by extrafascial way and the fixation of the same by helicoidal suture; of extrapleural or extrafascial detachment of the lung in its latero-posterior side, starting from the sixth costal arch to the level of the healthy area of the lung. Detailed late results are given.

RESUMEN

El autor Morelli presenta una forma de toracoplastia efectuada por vía axilar, que consiste en liberar completamente el lóbulo superior resecando las cinco primeras costillas por desarticulación posterior.

Así se obtiene un colapso defensivo, homogéneo y concéntrico al nivel del lado afectado que equivale a un neumotórax extrafascial electivo (neumotórax atmosférico).

Por medio de esta intervención las lesiones tuberculosas ubicadas en el lóbulo superior ya exudativas o productivas, en evolución aguda o crónica, unilateral o bilateral, microulceradas o muy excavadas son susceptibles de tratamiento.

El Dr. Di Paola presenta la intervención realizada con instrumentos ideados por el Dr. Morelli y detalla que la intervención consiste en la desarticulación por vía axilar de las primeras tres costillas primeras y la resección lateroposterior de la cuarta y quinta costillas que también son desarticuladas. Se realiza el descenso del vértice por la vía extrafascial y se fija el mismo por sutura helicoidal. El pulmón se despega en su cara latero-posterior por vía también extrafascial empezando a la altura del sexto arco costal hasta el nivel de la parte sana del pulmón. Se dan detalles de resultados alejados.

RESUME

Morelli: L'auteur décrit une technique de thoracoplastie par voie axillaire. L'opération consiste à libérer complètement le lobe supérieur, enlevant les cinq premières côtes par désarticulation postérieure.

Ainsi est obtenu un collapsus en détente, homogène et concéntrique du côté atteint. C'est l'équivalent d'un pneumothorax extra facial électif (pneumothorax atmosphérique).

Grâce à cette intervention, toutes les lésions tuberculeuses du

lobe supérieur sont susceptibles d'être traitées, qu'elles soient de type exsudatif ou productif, qu'elles soient d'évolution aigüe ou chronique, qu'elles soient unilatérales ou bilatérales, qu'elles soient constituées par de petites cavités ou largement excavées.

Di Paola: L'intervention pratiquée grâce aux instruments qui ont été conçus par le Dr. Morelli consiste en l'exérèse totale par voie axillaire, des trois premières côtes, leur désarticulation des vertèbres, et dans la résection des segments postéro-externes des quatrième et cinquième côtes, qui sont également désarticulées. Le sommet est abaissé par voie extra faciale, et on le fixe par une suture hélicoïdale. On détache le poumon de ses adhérences postéro-externes par voie extra-pleurale ou extra-faciale à partir de l'arc de la 6ème côte jusqu'au niveau de la partie saine du poumon. L'auteur donne en détails ses derniers résultats.

D i s c u s s i o n

JOSE ABELLO PASCUAL, M.D., F.C.C.P.
Madrid, Spain

We congratulate Professor Morelli and are full of admiration for his excellent work. His technique solves many of the problems which have occupied research workers in tuberculosis. We consider it of great value and believe it should be used more frequently.

In 1943, we attempted to solve some inconveniences of Semb's technique, particularly referring to those cases in which apicolysis was indicated. Apicolysis applies to those patients who have localized cavitary lesions in the apex of the lung. When operating upon these patients, even with formalization of the periosteum of the ribs in order to avoid their rapid regeneration, a tongue-shaped re-expansion of the lung very often followed. In a number of cases, the lesion has reappeared, particularly in those where the lesion tended to a certain grade of retractility. In order to avoid this re-expansion, we created with Tamames and Fando the following technique.

We started with the Semb, profiting by not resecting the inferior rib. After this, the apex of the lung was liberated extrapleurally, and the periosteum of the ribs above was conserved as much as possible, for this was the nourishing element of the rib. From the unresected rib, we took a piece of the dimension equal to the distance between the costal cartilage and the transverse process where it was introduced. We inserted the rib between the costal cartilage, splitting it slightly, and the corresponding transverse

processes which were split as well in order to facilitate the placement of the ribs in the connective tissue. After this, the rib was surrounded with intercostal muscles which were well vascularized to insure again the nourishment of the insert. By this procedure in various cases it was possible to achieve union.

This method offers some advantages; namely, elimination of the vertebral angle, thus preventing a dislocation of the lung in this area together with a transverse collapse which brings the lung as close as possible to the state which is produced by means of a well-executed pneumothorax.

The following case was operated upon seven years ago which is time enough to consider whether this technique has been useless or successful.

Maria del Carmen C., born in Madrid, came to see us in 1943, presenting a cavitary lesion with thick walls, confirmed by tomography. This was situated in the superior lobe and in its very center. She had Koch bacillus in the sputum. Pneumothorax was attempted, but no space could be obtained. Phrenicectomy was done, but in spite of the elevation of the diaphragm, no variation in the size of the cavity was seen. Then we decided to undertake this operation which was successful. A series of tomographies taken since then demonstrates that no residual cavity can be found. The patient feels well, and she has no bacilli either in her sputum or in her gastric specimen.

On the basis of an x-ray film taken July 6, 1950, the usefulness of this technique is demonstrated. The inserted rib has adhered perfectly.

Morelli, as you know, has advised a suture ligature of the apex of the lung with cat-gut. We do not think this is sufficient since the expansive force of the lung apex, with intact parenchyma below, is very great. We think, therefore, that the above-described technique can be considered useful. Perhaps it might be interesting to combine both in which case we would have the advantage of a permanent union safeguarding the success of the type of operation proposed by Professor Morelli.

X-ray of the patient C. C. taken in June 1950. The patient was operated in 1943. Rib-insert between the fifth dorsal vertebra and the fourth ventral rib.

Patient C. C. (female). Semb thoracoplasty, costal insert in the vertical from the fifth dorsal vertebra to the fourth ventral rib (operation made in 1943).

Again, I wish to congratulate Professor Morelli and thank you for the attention you have been kind to pay my presentation.

Treatment of Non-Tuberculous Spontaneous Pneumothorax*

ETIENNE BERNARD, M.D., F.C.C.P. and
ANDRE MEYER, M.D., F.C.C.P.
Paris, France

Non-tuberculous spontaneous pneumothorax is more common than tuberculous pneumothorax. During the last four years we have seen this accident occur in about 40 cases. During the year 1949 alone, one of us had the occasion to observe 11 cases, while, during the same period, he had only treated three cases of spontaneous tuberculous pneumothorax.¹⁶

On the other hand, everyone at present agrees as to the cause of these so-called idiopathic pneumothoraces. Laennec already suspected the part played by the emphysema air bubble which Devilliers confirmed in 1826.¹² Attention has again been drawn to this cause during the last 25 years by the anatomical and microscopic investigations of Fisher-Wasels,¹³ Miller,²⁰ and especially, Mariano Castex.⁷

We need not recall here the general study on non-tuberculous, spontaneous pneumothorax which we had outlined a short while ago;¹⁹ we shall merely emphasize the clinical, radiological and pleuroscopic characteristics on which the mode of treatment may depend.

Treatment is indeed conditioned by various factors based on the patient's examination and clinical history.

I) When one comes across a first attack and when the pneumothorax seems on the point of clearing up rapidly without treatment, no special measures are needed. Merely, in a few cases, one should promote pulmonary reexpansion by removing the intrapleural gas.

It is only exceptionally that an operation will have to be considered at the first crisis, either owing to alarming primary symptoms which exsufflation is unable to control, or owing to the presence of lesions requiring radical treatment such as a voluminous air cyst.

It should be emphasized that cases where a non-tuberculous spontaneous pneumothorax heals without treatment and runs a benign course are by far the commonest.

2) *Frequent relapses* of this accident call, on the other hand,

*Presented at the First International Congress on Diseases of the Chest, Rome, Italy, September 20, 1950.

for surgical treatment. When, after a first crisis, the cause of the pneumothorax persists, while pleural symphysis does not take place spontaneously one may fear the occurrence of relapsing pneumothorax which may occasionally involve, successively or simultaneously, both sides. This is a serious complaint. It is serious because it constitutes a considerable social hindrance and is an obstacle to normal activity. Further it is serious because it may end in the dramatic picture of acute asphyxia.

A rather delicate point is the time when one should speak of a relapsing pneumothorax and resort to surgical treatment. Rare relapses at distant intervals may cause one to postpone a decision; on the other hand one should operate without delay when relapses are frequent and occur at short intervals.

In any case relapsing spontaneous pneumothorax is rather common and, according to our experience, includes about one-fifth of the cases of non-tuberculous spontaneous pneumothorax. Among 86 cases, Crenshaw⁹ has observed 23 instances of relapsing pneumothorax.

3) *Acute asphyxia* is an alarming accident which may be of immediate danger to the patient's life. It usually supervenes after a series of relapses, either on one or the other side. It may be due to simultaneous involvement of the two pleural spaces.

When pleural aspirations are of no avail one should operate at once. This event is not extremely rare since it occurred twice in the 11 cases we studied in 1949.

4) *Chronic pneumothorax* occurs when, in spite of exsufflations, air has a tendency not to become resorbed while the lung is not reexpanding. One should not wait too long before resorting to surgery as there is a risk of pleural thickening taking place and constituting a serious surgical complication. The proportion of chronic pneumothorax cases is not high. It occurred twice among the 11 cases we followed up in 1949; however, Meade¹⁵ seems to consider it a rather common occurrence since among 19 cases which had to be operated, eight were relapses and 11 were chronic pneumothorax. Brock among 71 cases also noted a larger number of chronic¹⁶ than relapsing cases.^{6,25}

Therefore, in the majority of cases of non-tuberculous spontaneous pneumothorax, the treatment is simple and, indeed, healing often takes place in the absence of any treatment. There are three essential circumstances which call for surgical treatment, namely *relapsing pneumothorax*, *severe acute asphyxia* and *chronic pneumothorax*.

The operation will depend on the anatomical causes of the pneumothorax. Before coming to a decision one should endeavour to ascertain these causes. This may be done by means of radio-

graphy, tomography and pleuroscopy. No treatment should be considered before resorting to these three methods of exploration.

I. *Treatment methods* essentially include:

- 1) provoked pleural symphysis,
- 2) removal of one or several large cysts,
- 3) exeresis of a portion of the pulmonary parenchyma,
- 4) two subsidiary operations may be needed in certain cases:
 - a) pleural decortication,
 - b) thoracoplasty.

1) We shall insist chiefly on the technical aspect of provoked pleural symphysis, the other operations having no peculiar characteristic in spontaneous pneumothorax. New substances have been used for a long time. Silver nitrate seems to have been suggested by Spengler as far back as 1906 and Brock is still faithful to this procedure. Paul D. Crimmin¹⁰ uses oil which is advocated by a number of authors, in particular Hetherington and Spencer.¹⁴

We have adopted the intra-pleural insufflation of talc powder recommended by Bethune.⁴ This technique has already been described³ and has been the object of a detailed study by our friend and collaborator J. P. Nico.² We shall merely summarize here some essential points.

We perform two openings into which we introduce the pleuroscopy trocars and cannulas. By means of the pleuroscope we inspect the pleura and we identify emphysematous vesicles. We destroy systematically with the cautery subpleural bubbles which we observe on the lung as well as those adhesions which are easily resected. Moreover, thanks to these two openings we are able to control through the pleuroscope the talc insufflation and its regular distribution, as a thin layer, over all the pulmonary surface.

To deposit talc into the pleura we use a metallic pulverizer to which we adapt a syringe, the end of which is provided with an air aspiration filter. A metallic stem is placed on the metallic recipient. The stem is introduced into the pleuroscopy cannula. We use pure talc powder, sterilized at high temperature.

An essential point in our technique is the wide disinsufflation we practice before removing the pleuroscopy cannulas. We secure this by asking our patient to make wide expiratory efforts, while the cannula end is stopped during inspiration. At the end of this procedure the patient is submitted to radioscopy. In some cases the lung is near the chest wall or this may be obtained through slight disinsufflation with a needle. One may be sure then that definite adhesion will soon be secured (in one to two days). If a slight space persists between the lung and chest wall, one may rely on symphysis taking place in spite of this. It may take longer and further exsufflations may be required. We have seen it happen

by creating, in succession, several adhesion zones over several days or even several weeks (Figure 1). However, usually, symphysis is obtained within 10 days. The insufflation of talc gives rise to immediate, rather severe pain. It is followed by pains, liquid pleural reaction and sometimes a rather high temperature. These symptoms are benign and seldom persist beyond four to six days.

On the whole we have had excellent results and the method has proved constantly effective.

We do not think like Crenshaw that this method gives rise to more marked functional deficiency than that following thoracotomy. On the other hand, mention has been made of the risk involved through the presence of talc in the pleura, a risk which has been compared to the accidents caused by the presence of this substance in the peritoneum (talc-granuloma). Delarue does not think one need fear this risk but he wonders whether intrapleural talc may not have pulmonary consequences comparable to those he has noted experimentally in the rabbit.¹¹ Among the numerous cases of intrapleural talc injection we have performed during the last 10 years, we have never had an accident.

2) The removal of one or several large cysts is a simple, quite satisfactory operation. Paul D. Grimm,¹⁰ O. T. Clagett,⁸ Meade, Crenshaw,⁹ have had an opportunity of using it. We have published a case with O. Monod.¹⁸ In such a case the disease is easily cured by definitely removing the cause without having to sacrifice any extensive parenchyma. This preservation of the pulmonary tissue may be yet more perfect when, as happens sometimes, the cyst is joined to the lung by a slender pedicle. Bariety, O. Monod and Lesobre^{1,2} have had an opportunity to observe conclusive cases of this kind.

3) Exeresis of a part of the pulmonary parenchyma is sometimes required: a segment, a lobe or even more. The operative technique has no peculiar characteristic in these cases. We shall merely

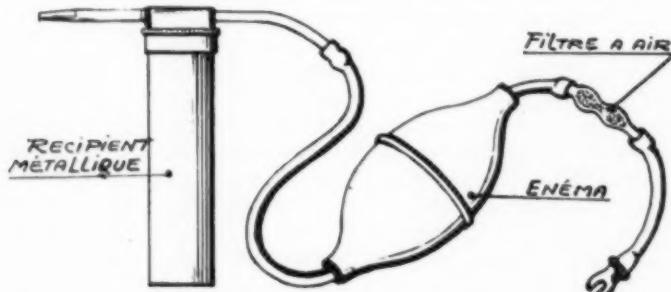


FIGURE 1: Taken from J. P. Nico.

repeat with all the authors who have dealt with the subject that the pulmonary tissue should be spared as far as possible.

4) Finally, in certain cases, one may have to perform pleural decortication. We shall see that the frequency of this emergency has been discussed.

Only in very exceptional instances does one need to resort to a thoracoplasty.

II. *Operative indications* are dictated, as we have seen, by the course of the disease and its clinical characteristics. We must now consider what type of operation is suitable in each case and, in some measure, *determine its choice*. The latter essentially rests on the anatomical conditions which are at the basis of the pneumothorax. It is the accurate investigation of responsible lesions which determines the choice of the operation. Whether the indication is a relapsing pneumothorax, a chronic pneumothorax or an asphyxiating form the patient should be submitted to the same investigations:

a) Through adequate radiography and tomography one should endeavor to ascertain the site and number of emphysematous vesicles.

b) Pleuroscopy is indispensable. It is, in our opinion, a capital feature and it gives the most interesting information. We are surprised that American authors should not attach more importance to this examination and should show a tendency to explore the pulmonary surface only at the time of thoracotomy. When one knows what a benign operation pleuroscopy is, while it gives information which, although not so accurate, is practically sufficient, we think there should be no hesitation. To refer only to the most recent publications we observe that Crimm has little to say on the subject, Meade thinks it is inadequate and Crenshaw acknowledges that he has not used it; the latter adds, however, that it might be beneficial and enables one to avoid, in certain cases, a thoracotomy.

These x-ray and pleuroscopic investigations will reveal the lesions the nature and extent of which shall determine the operation.

1) In some cases, neither through the x-ray film nor through pleuroscopy, does one see bubbles or cysts. These instances are rare and we have only come across them once. One may object that this was due to the inadequacy of our exploratory methods, and, in particular, if we had resorted to an exploratory thoracotomy after the pleuroscopy things might have been different. We shall point out, however, that Meade among eight cases of relapsing pneumothorax explored by *thoracotomy* came across three in which no lesion could be seen.

In fact, like Meade, our advice is to follow, in these cases,

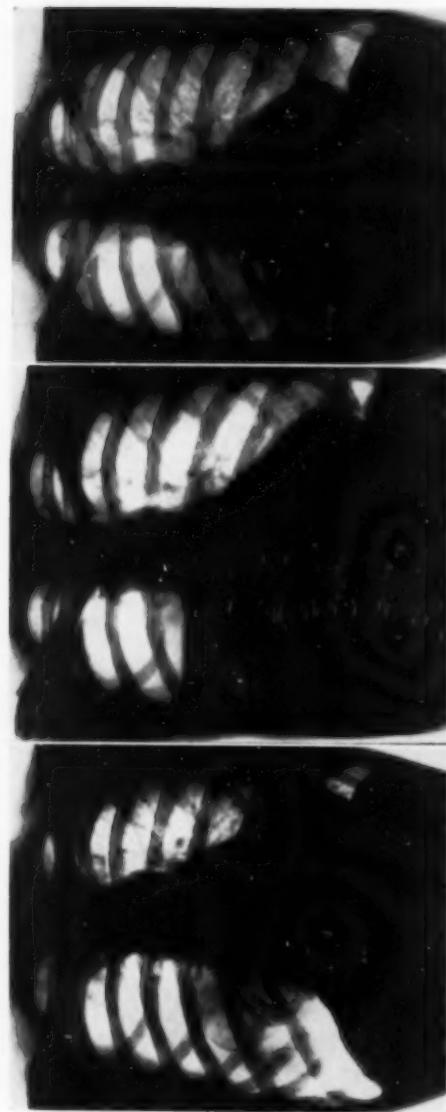


FIGURE 2a: Before Surgery.

FIGURE 2b: Immediately after talc
projection (July 7, 1949).

FIGURE 2c: July 13, 1949.

exactly the same line of action as when one notes the presence of multiple emphysematous vesicles.

2) As a rule, whether revealed by the x-ray film, or radiologically invisible, *multiple, disseminated emphysematous vesicles* on the pulmonary cortex are the responsible agents of these accidents. Pleuroscopy enables one to see them easily.

In our opinion these are a definite indication for *talc* injection. We apply this method after the pleuroscopy which has revealed the lesions, or during this procedure. We proceed at the same time to the destruction of those pleural adhesions we have detected. We do not see how thoracotomy, which is after all a much more severe operation, is superior to our method. Meade mentions the long duration of treatment and convalescence in the cases of Hennel and Steinberg and in the case of Brock. As far as we are concerned all our patients treated with talc have been definitely cured in one to three weeks, exceptionally, one month. We have never had a complication or a relapse. Crenshaw and Herbert C. Maier⁹ believe that thoracotomy spares the pulmonary function better than pleural irritation, which, however, Crenshaw uses occasionally. One should acknowledge that the difference is slight and that thoracotomy accompanied by the cauterization or puncture of vesicles unquestionably gives rise to a pleural reaction which is probably not very different from that which we secure with talc.

3) When x-ray inspection, which may be very characteristic in certain cases (Figures 2a-e) and pleuroscopy show a *voluminous*

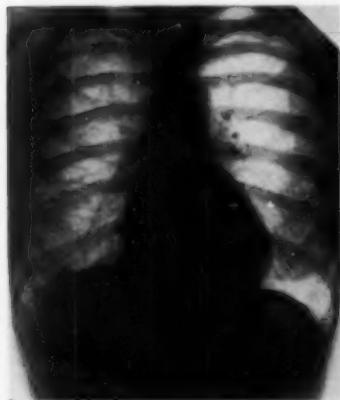


FIGURE 2d

Figure 2d: Completely healed.

Figure 2e: Actual state after talc projection.



FIGURE 2e

emphysematous bleb or a large cyst, in any case when these lesions are few, there is no question of carrying out pleural symphysis through talc injection. One should in this case perform thoracotomy and simply remove the bleb or cyst. The operation is easily carried out and yields excellent results.

4) When a series of *blebs or cysts* occupy a whole segment of the lung or a lobe, one should consider exeresis. It may involve one of the three lobes. Often enough an inferior lobectomy will have to be combined with a middle lobectomy.

5) When a chronic pneumothorax is accompanied by a thickened visceral pleura which makes pulmonary reexpansion impos-

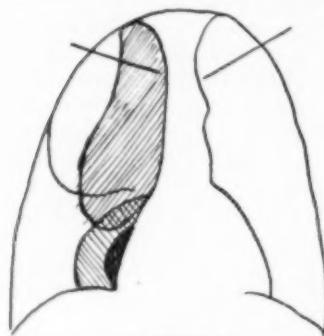


FIGURE 3a

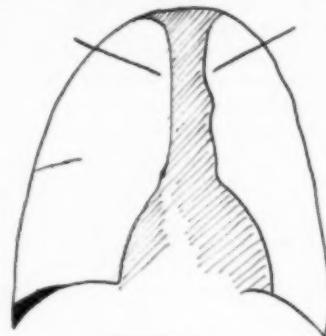


FIGURE 3b

Figure 3a: Pneumothorax and voluminous cyst.—Figure 3b: After surgery.

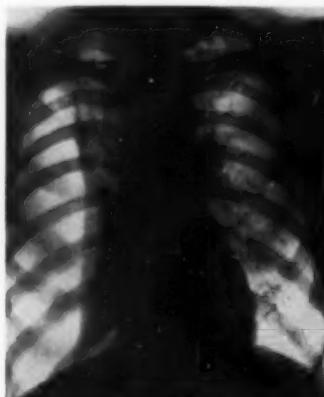


FIGURE 4a



FIGURE 4b

Figure 4a: Before surgery.
Figure 4b: After lobectomy, decortication and thoracoplasty.

sible, one may have to perform *pleural decortication*. In our experience, indications for this operation have been scarce.

After Brewer,⁵ Meade however lays emphasis on this procedure. Among the 11 cases of chronic pneumothorax he has studied, it had to be performed six times. We think there is here an unusual occurrence of peculiar circumstances. Crenshaw has never had to resort to pleural decortication and, among our own cases, there was only one indication.¹⁷ One should know, in this respect, that chronic pneumothorax does not necessarily involve pachypleuritis and the impossibility of pulmonary reexpansion. Excepting cases where expansion is impossible from the start and where it is obvious that a thick pleural sheath exists, one may hope to get, through talc alone, perfect pleural symphysis. We have successfully resorted to this procedure in all our cases of chronic pneumothorax with one exception. Sometimes the establishment of pleural symphysis and pulmonary reexpansion are slightly delayed, sometimes even they occur in successive stages. They are the only difficulties one may expect.

6) If, in spite of decortication, the lung does not succeed in filling up the pleural space, one may sometimes have to resort to thoracoplasty.

This operation may also be necessary in order to secure mediastinal equilibrium after an exeresis. Finally we deem it important not to let the remaining lobe reexpand too much after an exeresis. There would then be a risk of emphysema which would be dangerous for the pulmonary function. This has induced us¹⁷ to complete an upper lobectomy associated with decortication of the lower lobe by a thoracoplasty of the apex in order to avoid an emphysematous transformation of this lobe (Figures 3 and 4).

SUMMARY

We have had the opportunity of examining and treating about 100 cases of non-tuberculous spontaneous pneumothorax, of which approximately 40 were since 1945 and 11 in the year 1949 alone. This is usually a benign disease which requires only the simplest measures.

In some cases however the symptoms and course of the disease depart from this usual benign aspect and call for active treatment. One is then dealing with relapsing pneumothorax, chronic pneumothorax or pneumothorax with acute asphyxia.

The choice of the procedure to apply in each case depends on the responsible anatomical lesion.

With diffuse emphysematous vesicles, the commonest occurrence, we do not think it advisable to resort to thoracotomy. Pleuroscopy

is enough to reveal the lesions, resect adhesions and bring about pleural symphysis by talc projection.

When dealing with a voluminous vesicle or an air cyst, either single, or few in number, they may be eliminated by removing them during thoracotomy.

Emphysematous or cystic lesions localized in a part of the lung call for a limited exeresis which usually consists of lobectomy.

Finally in some cases of chronic pneumothorax, with marked pleural thickening, one may sometimes be obliged to perform decortication.

In some cases one may have to complete these procedures by thoracoplasty, particularly in order to avoid hyperexpansion of the remaining lobe after exeresis.

RESUMEN

Hemos tenido la oportunidad de examinar y tratar aproximadamente cien casos de neumotórax espontáneo no tuberculoso, de los que 40 fueron desde 1945 y 11 en el año de 1949 solamente.

Es una enfermedad habitualmente benigna que solo requiere medidas sencillas. En algunos casos sin embargo, los síntomas y la evolución se apartan de este aspecto benigno y necesitan un tratamiento activo. Se trata entonces de un neumotórax recidivante o crónico, o bien es neumotórax con asfixia aguda.

La elección del procedimiento depende de la lesión anatómica responsable.

En el caso de vesículas enfisematosas no creemos que sea necesario recurrir a la toracotomía. Basta la pleuroscopia para revelar las lesiones, resección de adherencias y provocar sínfisis pleural por la polverización de talco.

Cuando se trata de una vesícula voluminosa o quiste aéreo, simple o en pequeño número, pueden ser tratadas por excisión durante toracotomía.

Las lesiones enfisematosas o quísticas localizadas en parte limitada del pulmón, requieren exérésis limitada que generalmente es la lobectomía.

Finalmente en algunos casos de neumotórax crónico con engrosamiento pleural marcado, puede uno verse obligado a realizar la decorticación.

A veces hay que completar esto con toracoplastia sobre todo para evitar la extrema expansión del lóbulo restante.

RESUME

Nous avons eu l'occasion d'examiner et de traiter environ 100 cas de pneumotorax spontanés non tuberculeux. Nous en avons suivi 40 depuis 1945, et 11 dans la seule année 1949.

Il s'agit en règle générale d'une affection bénigne, qui ne demande que des mesures extrêmement simples. Toutefois dans certains cas, la maladie perd son habituelle bénignité, et demande un traitement actif. Il s'agit alors soit de pneumothorax à rechutes, soit de pneumothorax chronique, soit de pneumothorax s'accompagnant d'asphyxie aigüe.

Le procédé de traitement qui convient à chacun des cas varie selon les lésions anatomiques.

Lorsqu'il s'agit de vésicules emphysémateuses disséminées ce qui est le cas le plus habituel, nous ne pensons pas qu'il faille avoir recours à la thoracotomie. Grâce à la pleuroscopie, on peut mettre en évidence les lésions, supprimer quand il le faut les adhérences, et réaliser une cymphise pleurale thérapeutique par projection de talc.

Lorsqu'il s'agit d'une vésicule emphysémateuse volumineuse ou d'un kyste aérien, et que cette lésion est unique, ou en nombre très limité, on doit intervenir par thoracotomie, et en pratiquer l'ablation.

Lorsqu'il y a des lésions emphysémateuses ou kystiques, occupant tout un segment ou tout un lobe du poumon, il faudra réaliser l'exérèse de cette zone de parenchyme.

Dans certains cas de pneumothorax chroniques, avec une plèvre particulièrement épaisse, on peut être amené à réaliser une décortication. Dans certains cas, on peut être obligé de compléter cette intervention par une thoracoplastie, en particulier pour éviter l'hyperexpansion du lobe restant à la suite d'une exérèse.

REFERENCES

- 1 Bariety, Monod O. and Lesobre, R.: "Exérese d'un kyst aérien géant avec conservation intégrale du parenchyme pulmonaire," *Bull. et Mém. de la Soc. Méd. des Hop. de Paris*, 24 Janvier 1947, Nos. 5-6-73.
- 2 Bariety, Monod O. and Lesobre, R.: "Exérese d'un volumineux kyste aérien rompu assurant la guérison d'un pneumothorax spontané chronique. Conservation intégrale du parenchyme pulmonaire," *Bull. et Mém. de la Soc. Méd. des Hop. de Paris*, 11 Juillet 1947, Nos. 23-24-26-716.
- 3 Bernard, E., Meyer, A., Nico, J. P. and Depierre: "Sur le traitement du pneumothorax spontané sévère du à la rupture des bulles emphysémateuses (cymphise provoquée par talcage intra-pleural)," *Journal Franc. de Méd. et Chirurgie Thoraciques*, 1949, Nos. 6-536.
- 4 Bethune, N.: "Pleural Poudrage. New Technic for Deliberate Production of Pleural Adhesion as Preliminary to Lobectomy," *J. Thoracic Surgery*, 1935, 251-261.
- 5 Brewer, Dolley and Evans: "The Surgical Management of Chronic Spontaneous Pneumothorax," *Meeting Am. Assn. Thoracic Surgery*, New Orleans, March 30, 1949.
- 6 Brock: "Recurrent and Chronic Spontaneous Pneumothorax," *Thorax*, 1948, 388.
- 7 Castex, M. and Mazzei, E.: "Pneumothorax espont. benigno par ruptura de burbujas ampulares subpleurales," *Prensa Med. Argent.*, 21:7, 1935, pp. 1607-1623.
- 8 Clagett, O. Th.: "Surgical Treatment of Emphysematous Blebs and Bullae," *Dis. of Chest*, 15:669-681, 1949.

- 9 Crenshaw, G. L.: "Etiology, Treatment and Surgical Indications of Non-Tuberculous, Non-Traumatic, Spontaneous Pneumothorax," *Dis. of Chest*, 17:369, 1950.
- 10 Crimmins, Paul D.: "Spontaneous Collapse," *Journal of Thoracic Surgery*, 17:662, 1948.
- 11 Delarue, J.: "A propos du traitement préventif des pneumothorax spontanés récidivants. Les effets du talc sur les séreuses," *Journ. de Méd. et de Chirur. Thoraciques*, 3:521, 1949.
- 12 Devilliers: "Du pneumothorax déterminé par la rupture de la pleure et d'une vésicule aérienne emphysématueuse," *These Paris*, 1826.
- 13 Fischer-Wasels, B.: "Der Gartartige spontan. Pneumothorax durch Ruptur von Spitzennarbenblasen," *Zeitschr. f. klin. medizin*, 95:1, 1922.
- 14 Hetherington and Spencer: "Treatment of Recurrent Spontaneous Pneumothorax with Gomenol," *Dis. of Chest*, 13:652, 1947.
- 15 Meade, Richard H. and Blades, Brian R.: "The Surgical Treatment of Recurrent and Chronic Spontaneous Pneumothorax of Non-Tuberculous Origin," *Amer. Review of Tuberc.*, 60:683, 1949.
- 16 Meyer, A., Brunel, M. and Nico, J. P.: "Le Traitement du pneumothorax spontané non tuberculeux," *Bull. et Mém. de la Soc. Méd. des Hop. de Paris*, 4:751, 1950.
- 17 Meyer, A., Mathey, Brunel M. and Castel, Y.: "Pneumothorax par rupture de vésicules emphysématueuses du sommet traité par lobectomy, pleurectomie et thoracoplastie," *Soc. Fr. de Pathologie Respiratoire*, 11 Juin 1950.
- 18 Meyer, A., Monod, O., Grenet, P. and Dubois de Montreynaud, J. M.: "Volumineux kyste aérien du poumon ayant déterminé un pneumothorax. Exérèse avec conservation intégrale du parenchyme pulmonaire," *Bull. et Mém. de la Soc. Méd. des Hop. de Paris*, 22-23:763, 1948.
- 19 Meyer, A., Nico, J. P. and Mme Cotlenko: "Le pneumothorax spontané non tuberculeux," *Paris Médical*, 1949, 10, 12 Février 1946.
- 20 Miller, W. S.: "A Study of the Human Pleura Pulmonalis; Its Relation to the Blebs and Bullae of Emphysema," *Amer. Jour. of Roentgenology*, 15:399, 1926.
- 21 Nico, J. P.: "Le traitement actif des pneumothorax idiopathiques récidivants par la symphyse pleurale provoquée (méthode au talc)," *Le Poumon*, 6:167, 1950.

Etiopathogenesis of Suppurative Diseases of the Lungs*

PAVEL LUKOMSKI, M.D.
Moscow, U.S.S.R.

My task is to clarify some fundamental problems of etiology and pathogenesis of suppurative diseases of the lungs on the basis of works of Soviet scientists and my own observations during the last 10 years.

First: the question of terminology. Is it expedient and possible to strictly distinguish between abscess and pulmonary gangrene on the basis of clinical manifestation? Judging from a large number of clinical patients observed, one must come to the conclusion that the clinical distinction of abscess and pulmonary gangrene is possible only in the minority of cases, in those cases which are so to say on the contrary poles, i.e. where the symptoms of gangrene or abscess are shown more clearly. In the majority of cases it is difficult and almost impossible to clearly differentiate between gangrene and abscess on the basis of a clinical picture. Besides this the clinical course of the disease often changes acquiring features which are peculiar now more to abscess, now more to pulmonary gangrene; there is no doubt that in the course of the disease abscess may change into gangrene and gangrene into an abscess. As it is shown by the pathologic data simultaneous existence in the lungs of the changes peculiar to abscess as well as to gangrene is possible. That is why the majority of Soviet clinicians in accord with the late academician S. I. Spasokukotzky, the most prominent pulmonary surgeon, widely use the term suppurative diseases of the lungs.

The microflora of the sputum does not show the character of pulmonary disease—that is whether it is gangrene or abscess. We shall come to that question later.

A correct choice of treatment of any disease presupposes as its premise a correct notion of its etiology and pathogenesis. We shall not dwell on those etiopathogenic cases the significance of which in the origin of pulmonary suppurations doesn't call forth doubts. Therefore we shall put aside the pulmonary suppurations of embolic, aspirative and traumatic origins, suppurations connected with the presence of bronchogenic cancer of the lungs, etc. We shall only say that according to the statistics of various authors,

*Presented at the First International Congress on Diseases of the Chest,
Rome Italy, September 19, 1950.

particularly American, the specific incidence of pulmonary suppurations of aspirative origin occurring after operations especially in the oral cavity and the pharynx, particularly after tonsillectomy, is very great among suppurative diseases of the lungs. Whereas in the statistics of Soviet authors the suppurative diseases of the lungs of such origin play an insignificant role.

The question of the relation between pneumonias and pulmonary suppurations is of special interest and great practical importance. The notion of many authors that most suppurative pulmonary processes are connected with pneumonias should be recognized as without sufficient basis. It cannot be denied that in a number of cases suppuration may be looked upon as a complication of pneumonia, mainly focal and not pneumococcal lobar pneumonia. However one often sees patients who already, after the first two to four days of illness, expectorate large quantities of purulent fetid sputum. There isn't enough basis to attribute such cases to postpneumonic suppurations of the lungs as is often the case. Evidently there are cases where the process in the lungs for various reasons (a change of the reactivity of the organism, serious disturbances of blood circulation in the lungs) develops from the very beginning as suppurative. The notion of a frequent pathogenic connection between pulmonary suppurations and pneumonias is explained by the fact that initial symptoms of pulmonary suppuration often resemble to a great extent the clinical picture of pneumonia. Due to it later on when there are already indisputable signs of formation of abscess for instance in the form of expectoration of more or less large quantity of purulent sputum the suppuration is presumably connected with an earlier case of pneumonia.

The question of the connection between a suppurative pulmonary process and pneumonia is often difficult to decide not only for a clinician but for a pathologist. The most prominent Soviet pathologists (Abricosov, Davidovsky) point out that sometimes one has to judge the connection between gangrene and pneumonic focus only from the patient's anamnesis as the pneumonic focus in the development of gangrene in some cases completely disappears. The conclusion of pathologists on the postpneumonic origin of gangrene on the basis of clinical and not directly anatomical data is a source of errors causing a wrong notion of a particular connection of suppurative diseases of the lungs with pneumonias.

An important role in the question of the etiopathogenesis of pulmonary suppurations is played by the character of microflora found in the sputum and in the lungs during this illness. Judging from numerous observations of Soviet and other authors and bacteriological research made on our patients, the microflora

during pulmonary suppurations (with the exception of metastatic abscesses) is usually polymorph and has much in common with microflora of the oral cavity; pyogenic cocci are particularly often met with here. Polymorphism of the flora indicates that we cannot speak of any definite specific agent of suppurative diseases of the lung. This fact becomes intelligible if it is approached from the neurogenic point of view which dominates in Soviet medicine, ideas which originated with S. P. Botkin, the eminent Russian clinician of the second half of the 19th century and which have found their physiological and experimental basis in the works of genius of the greatest Russian physiologist, I. P. Pavlov, and in the researches of his disciples.

It's a well known fact that the infection of a person even by a specific agent is not enough to call forth in him any definite illness. Whether the disease is called forth or not depends on the reactivity of the human organism which in its turn is determined in the main by the state of the nervous system. This condition is the more so correct in suppurative diseases of the lungs for which there exist no specific agent and where the deciding factor for the calling forth of the illness and its course is the state of a person's reactivity, i.e. in the final analysis the state of his nervous system. That is why we, contrary to many foreign authors, do not attach deciding significance as mentioned above to the microflora of the sputum in distinguishing the gangrene from the abscess. The penetration into an affected lung of a fusospirochetal infection, agents of gas gangrene and other anaerobic organisms is secondary and not the cause for the outbreak of the disease though it may exercise some influence on its further development.

The aforementioned notion of the role of infection, the reactivity of a person's organism and the state of the nervous system for the outbreak of suppurative diseases of the lungs finds its confirmation in the observations during the war period on people and in experiments on animals. True, this concerns not suppurative diseases of the lungs but pneumonias, however, principally, the question remains unchanged. Soviet clinicians have observed that pneumonias occur particularly often in those with wounds in the skull and face. The sole explanation of the occurrence of such pneumonias was in many cases the recognition of their reflex origin. So-called vagal pneumonias occurring when the animals experimented on had the vagus cut in the neck have been known for a long time. Academician A. D. Speransky with his collaborators obtained pneumonia in animals by different manipulations on the central nervous system (suboccipital injections of various substances into the subarachnoidal area, etc.). The work of A. B. Tonkich, Soviet physiologist who was able to call forth pneu-

monias in experimental animals or by irritation of the upper cervical sympathetic ganglia, is of great interest. All these observations and experiments as well as many others which I have no possibility of mentioning and the observations of Soviet pathologists (Abricosov, Mogilnitsky) on the changes of sympathetic ganglia during pneumonias confirm the correctness of the neurogenic theory of the pathogenesis of pneumonia and also its application to suppurative diseases of the lungs.

SUMMARY

The recognition of the significance of the nervous system in the development of suppurative diseases of the lungs allows us to draw several important practical conclusions in connection with the conservative treatment of pulmonary suppurations. Therapeutic measures must exercise direct influence not only on micro-organisms in the lungs but on the patient's nervous system as well, changing the reactivity of the human organism; just from this point of view the favorable therapeutic effect of blood transfusion during suppurative diseases of the lungs should be valued. The very effect of antibiotics that are widely used in the Soviet Union in the treatment of pulmonary suppurations should be also looked upon and studied not only from the point of view of its effect on the micro-organism but also on the macro-organism. In general all organization of medical assistance should be centered on the patient, creating for him such conditions which would raise his ability to fight the disease, would ease his struggle with it. An early diagnosis, timely hospitalization, dispensary observation after discharge from the hospital assure favorable results in the treatment of this serious illness.

RESUMEN

El reconocimiento de la importancia que tiene el sistema nervioso en el desarrollo de las supuraciones pulmonares, nos permite extraer algunas conclusiones prácticas sobre el tratamiento conservador de ellas.

Las medidas terapéuticas deben influir no solamente sobre los microrganismos en los pulmones, sino que deben obrar también sobre el sistema nervioso del enfermo cambiando la reactividad del organismo humano. Desde este punto de vista la influencia de las transfusiones en las supuraciones debe valuararse.

El propio efecto de los antibióticos que son usados ampliamente en la Unión Soviética en el tratamiento de las supuraciones pulmonares, debe también estudiarse no solo por su efecto sobre los microrganismos sino sobre los macro-organismos.

En general toda organización de asistencia médica debe pla-

nearse tomando como centro el enfermo, creando para él condiciones que aumenten su capacidad de lucha para combatir la enfermedad. Un diagnóstico temprano, oportuna hospitalización, observación dispensarial después de salidos del hospital, aseguran resultados favorables en el tratamiento de esta seria enfermedad.

RESUME

La notion du rôle du système nerveux dans le développement des suppurations pulmonaires comporte plusieurs conclusions pratiques. Les mesures thérapeutiques ne doivent pas se contenter d'agir directement sur les bactéries des poumons, mais elles doivent également atteindre le système nerveux du malade. A ce point de vue, l'effet favorable de la transfusion sanguine au cours des suppurations pulmonaires doit être mis en valeur. L'action des antibiotiques, qui sont largement utilisés dans l'Union Soviétique pour le traitement des suppurations pulmonaires, doit être également prise en considération, non seulement du point de vue de leur effet sur les bactéries, mais aussi sur l'organisme du malade.

En général, il faut créer chez le malade des conditions meilleures de lutte contre l'infection pour en venir à bout. Un diagnostic précoce, une hospitalisation dans des délais convenables, et une observation continue par les dispensaire après départ de l'hôpital, sont les facteurs favorables de traitement dans cette sérieuse affection.

Bronchiectatic Bronchiolitis*

A. OMODEI ZORINI, M.D., F.C.C.P. and LUIGI PIGORINI, M.D.
Rome, Italy

In our report to the 1934 National Convention on Internal Medicine we extensively discussed a new bronchiectasis syndrome which we called "larval bronchiectasis" or "bronchiectatic bronchiolitis," believing it to be autonomous and "sui generis" on the basis of 14 cases studied both from a clinical and bronchographic standpoint. Similar cases were subsequently described by Frugoni (in clinical lectures), Scarinci, L'Eltore, Vercesi, Salerni, Centra, Rovelli and Persi, Gullotta and other authors.

This syndrome is by no means rare. Today we can count on about 100 personal cases. Recently one of our patients underwent pneumectomy. We were thus afforded an opportunity to study the pathologico-anatomic and pathogenic problems, both of which had remained practically unsolved up to some time ago.

Which are the essential clinical characters distinguishing this syndrome from patent bronchiectasis? Familial past history includes frequent cases of tuberculosis and acute and chronic diseases of the respiratory apparatus, denouncing a particular pathological liability of the family, insofar as bronchi and lungs are concerned, towards common infective agents. Syphilis, instead, is infrequent. The apparent beginning of the disease is related to acute and subacute bronchopneumonic processes, often grippal or pleuritic; in other cases to a more or less pronounced hemoptysis. The subsequent course of the illness is characterized by a more or less patent state of bronchitis or dry bronchiolitis, with scarce, non-fetid expectoration, without fever, without depression and with more or less frequent periods of feverish and hemoptoic recrudescence.

Hemoptysis is a paramount symptom, occurring at broad intervals, congestive and hemorrhagic form, in a manner recalling fibrous or abortive tuberculosis: for these reasons such patients are usually sent to sanatoria. Generally speaking, hemoptysis is neither substantial nor persistent; in some cases they are abundant and occur repeatedly, but without any evident worsening of general conditions. Physical examination does not reveal anything clearly recalling chronic bronchiectasis: Hippocratic fingers, cyanosis, dyspnea, abundant and fetid expectoration are absent.

*Presented at the First International Congress on Diseases of the Chest,
Rome, Italy, September 19, 1950.

General condition remains good and does not interfere with the normal somatic development of young patients.

The examination of the chest does not result in anything revealing on the diseased side. The form of the chest is usually normal; it is not barrel shaped, unless there is a concomitant emphysema. As a rule, palpation and percussion are negative.

The fundamental clinical datum is auscultatory: A constant finding, unchanged even after a number of years, more evident after cough along a two-inch strip above the inferior posterior margin of one or both bases, generally near the spine and thus in the retrocardiac area, of fine, small bubbling rales, subcrepitant in expiration and inspiration, without any apparent change in the type of breathing, which never acquires any cavitary character. At times a slight degree of diffused dry bronchitis, denoted by a sibilant breathing on the same or opposite side, is associated with the local finding.

This picture of bronchitis and chronic basilar circumscribed bronchiolitis, when it endures, stubbornly resisting all antitussive and antiluetic therapy, acquires in my opinion a significant diagnostic meaning for larved bronchiectasis, sufficient, if not to afford a positively certain diagnosis, at least to raise serious suspicions, deserving subsequent bronchographic confirmation.

The physical finding is more apparent and widespread during the acute phase, when hemoptysis and bronchial or bronchopneumonic processes, more or less widespread, add to it; but the symptomatology of circumscribed bronchiolitis remains constant even during the recess periods, thus denoting an irreparable anatomic and functional alteration of a certain bronchial area.

The clinical picture we have described has a number of points in common with the one described in 1924 by Azoulay and Bezançon, and defined as "dry hemoptysis bronchiectasis," while at the same time differing in some fundamental characters. Azoulay has described only two cases of bronchiectasis of the superior lobe, with repeated hemoptysis, without expectoration, an objective finding of chest retraction and, by auscultation, of a cavitary syndrome; during the congestive hemoptysis resounding gurgling rales were formed, confirming the physical diagnosis of pathologic cavities. Bronchography revealed considerable ampullary and cystic dilatations of the bronchi in the diseased area. Azoulay believes their genesis to be syphilitic, to the point that he writes of bronchial aneurism, and thinks they may represent a latent initial phase of real infective and suppurative bronchiectasis.

Along the lines of the two French authors, other cases of dry hemoptoic bronchiectasis were described (Ameuille, Reinberg, Pinkin and Morlok, Burrel and Trail, Toussaint and Dercheid, Wall

and Clifford Hoyle); on the other hand, Azoulay's ideas are far from being generally accepted, and many authors, also French, attribute such cases to a chronic fibrous tuberculosis associated with bronchial dilatation (Toussaint, Dercheid, Kindberg and Léon Bernard). Cases of the kind often mistaken for chronic apical and subapical tuberculosis, were brilliantly described in 1941 by Dr. Aprile Abruzzini.

Our "larval" syndrome appears to have peculiar and characteristic course, nearly always hemoptysis, but more benign than the apparent forms, of which it can be considered a "miniature" portrait and not, as Azoulay would maintain, an initial phase.

Essentially, it is based on the following characters:

- 1) A dry bronchitic state, generally dating from childhood or early youth, without fever, asthenia, depression, or presence of Koch's bacilli in the expectoration.
- 2) Frequent and recurrent hemoptysis, with or without acute or subacute bronchopneumonic foci.
- 3) As a result of physical examination, a constant finding of bronchitis and basilar bronchiolitis, without cavitary facts.
- 4) As a result of bronchography, a picture of cylindrical dilatations, circumscribed to a peripheral bronchial area and associated with particular alterations of the acino-alveolar system without pulmonary foci, either tuberculous or due to other causes, in a state of activity.

Let us now discuss the subject from the roentgenological and bronchographic standpoint.

In 1934 we had spoken in general terms of cylindrical dilatations of the bronchi of the pulmonary bases: the study of such alterations was pressed forward by Pigorini, who has published a number of papers on the subject.

Roentgenological examination stresses minor signs, very far from such positive signs as often characterize patent bronchiectasis forms. Roentgenograms do not reveal such step-patterned and annular densities which may justify at times a tentative diagnosis of common bronchiectasis. The diseased basilar areas present instead a quite normal picture, or else a slight hyperlucency often associated with a very slight alteration of pattern, consisting in very fine networks with unequal meshes, or in fine, rectilinear or curve isolated strands, which Pigorini himself attributes to an emphysematous state, or to a bullous alteration of the acino-alveolar system (Figure 1). In some cases there is also a certain rectilinearity of the diaphragmatic profile and a more or less evident hypomotility of the bases without signs of adhesive pleurisy.

The characteristics of the bronchographic picture can thus be

summarized: absence of marked bronchial alterations—large cylinders or sacculations—characteristic of patent bronchiectasis; presence of mild cylindric dilations, in a "rosary" or "small club" shape, effecting the most distal branches of the bronchial tree, that is the bronchioles; the increased caliber of the bronchioles is not generally uniform, presenting varicous and nodulated aspects of no easy interpretation (perhaps due either to a non-uniform alteration of the surrounding tissues, or to irregularities of the endobronchial mucosae, or still to varicous extroflexion of the bronchial vessels) (Figures 2, 3 and 4).

A considerably important point, to which attention must be called, is the slow and anomalous injection of the acino-alveolar system. In some cases bronchography revealed patterns considerably different from the normal "foliage" picture, typical of the normal acino-alveolar system, and consisting of "ball," "morula," "ink-blot" grouping, made up of a great number of punctiform elements. In the normal pictures the leaves, or better, the clover groupings, corresponding to an acinus are small (a few milli-

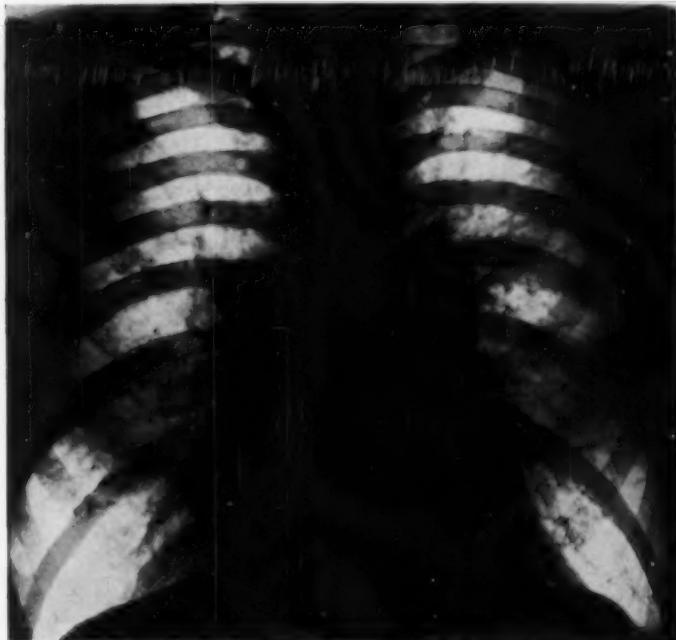


FIGURE 1

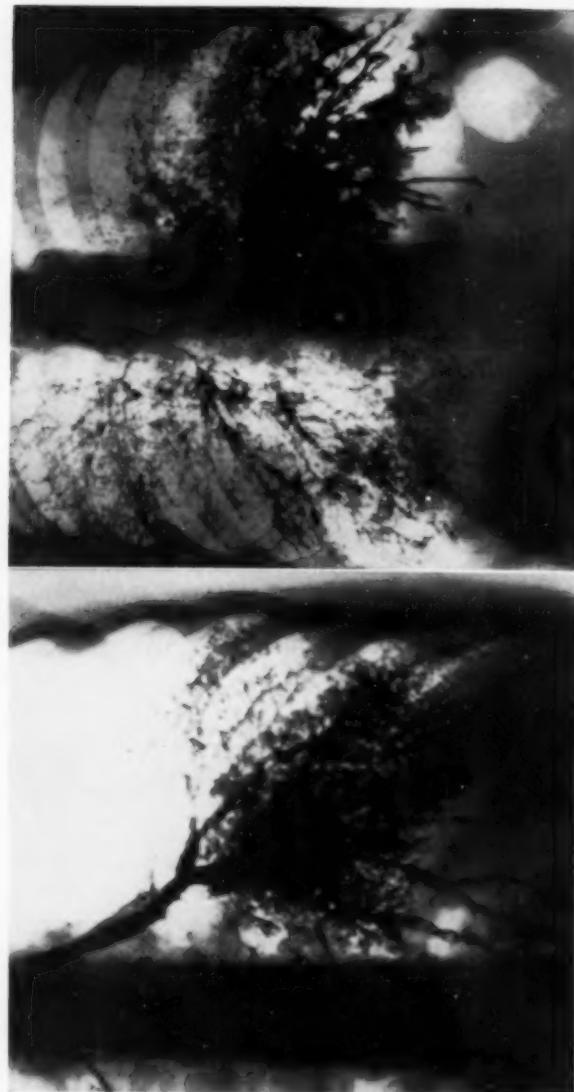


FIGURE 3

FIGURE 2

meters) and are in close connection with the bronchioles to which they are suspended just like leaves are suspended to the tips of branches. In these cases, instead, the single punctiform elements appear smaller than the leaves of the normal tree, whereas their groupings assume a morula appearance with proportions which are 10 times those of normal clover groupings. Furthermore, since the finer branches corresponding to the bronchioles are not visible, the relation between the groupings of punctiform elements and the bronchial tree are not visible on the bronchogram (Figure 3).

Pigorini discarded the idea of pulmonary atelectasis, owing to the hyperlucency of the roentgenogram, and interpreted such singular pictures as caused by an anomalous state, of bullous type, of the acino-alveolar system, associated with alterations of the small bronchi. Such hypotheses agree with the finding of hyperpneumatosis of the morula shapes we have described seldom appear, whereas there is often a total absence of acino-alveolar injection. It is in effect typical of this bullous structure that it does not inject, or it injects with great difficulty owing to a number of causes, including a pressure imbalance between the acino-alveolar dilatation and the adductor bronchial canalculus and

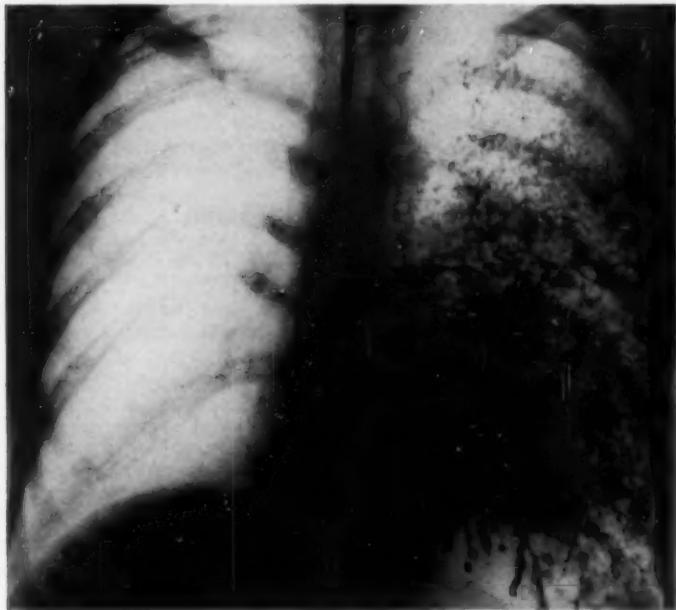


FIGURE 4

the scarce aeration of the area which does not help the descent of the iodized oil. To obtain injection one should use a fluid iodized oil and make roentgenograms at greater intervals.

Such a supposition was confirmed in the anatomo-histological examination of the following case, which we have recently studied:

L. Renato, age 31, born in Piombino. No important personal or family past history. Since 1946 he had suffered from periodic congestive bronchitic crises, lasting one to two weeks and occurring two to three times a year, characterized by a dry, persistent cough, with scant expectoration, without fever, but with recurrent hemoptyses which often conclude the crises. Sputum examinations, as well as roentgenological inspections often repeated in the last year, have always been negative. Also Wassermann reaction is negative.

Physical examination: the patient is tall (5 feet 9 inches), rather thin; the chest has a cylindro-conical development, is symmetrical and of normal motility; there is only a slight dyspnea from effort and a certain dilatation of the pulmonary bases. A number of subcrepitant rales were heard, both in inspiration and expiration, unaffected by cough and extending band-like along the right base, both posteriorly and in the axillary area.

Direct roentgenological inspection reveals a considerable bilateral basal hyperlucency, more evident on the right, which can be referred either to an emphysematous state or similar alteration of the acino-alveolar system. In the apices, especially the right one, slight, circinate formations were revealed, probably related to a bullous state.

Bilateral bronchography of the low areas reveal a diffused "rosary" and "club" alteration of the distal bronchi of the right side. The acino-alveolar system injects with particular difficulty and appears altered with "morulae." On the left side the picture is subnormal, though presenting slight alterations affecting the distal bronchi, especially in the infracardiac bronchus area, while the acino-alveolar system presents emphysematous and bullous patterns.

Clinical diagnosis was "bronchiectatic bronchiolitis," almost exclusively localized in the right distal and basilar bronchi. Since symptomatology progressed, the patient agreed to the suggestion of lobectomy (lower lobe of the right lung).

On July 4, 1949, Professor Valdoni did a total right pneumonectomy, since it was ascertained on the operating table that also the upper lobe was affected by diffuse cystic alterations.

Postoperative recovery was normal. There was a slight bloody effusion in the right pleural cavity, which was treated with thoracentesis and pleural lavage. Recent re-examination revealed good general condition. There has been no recurrence of hemoptysis. From a functional standpoint, he complains of a certain degree of dyspnea and asthenia, probably related to contralateral alterations, which may have been more diffused than what appeared from bronchographic examination. In any case, he was able to resume his work.

In another paper we shall describe the anatomo-histologic examination of the lung. For the moment here we shall give a brief summary of main characteristics of the disease.

The removed lung appeared slightly enlarged in volume, normal in weight and less consistent, especially in the apex and margins, which preserved fingerprints; there are also scattered fibrous lacunae, due to old pleurisy. Emphysematous bullae varying in size from a bean to a big nut were seen in the apex. Smaller emphysematous bullae were present also in the base, especially in the margins.

Incision revealed a diffuse emphysematous stratum, through the whole organ, and alternate widespread hard and sclerotic areas. This alteration was particularly apparent in the base of the upper lobe and in the peripheral region. At the base of the lower lobe a number of bronchi of medium and small caliber presented cylindrical dilatations: the same emphysematous diffuse alteration affecting the whole acino-alveolar system of the area was also very apparent.

From a histological standpoint, diffuse peribronchitis was predominant, and had caused in certain points a massive atelectasia, and in others, by a valve effect, emphysematous bullae. The picture recalls that of productive peribronchitis of syphilitic origin. It is noteworthy that no part of the lung revealed alterations of tuberculous origin.

At the base, in proximity of the pulmonary margins, were seen small bronchial dilatations, of a quasi cylindrical shape, and alternating constrictions: the bronchi thus assumed the appearance of a rosary. In this area there was slight peribronchial reaction, and the mucosa appeared substantially atrophic, surrounded by dilated alveoli in an evident emphysematous state. In the submucosa, there were apparent dilatations of blood vessels, which nevertheless do not project from the surface.

What is the pathogenetic interpretation of the bronchiectatic bronchiolitis syndrome? The prognosis of such disease is relatively benign. Generally it is static and the hemoptyses are not a cause for concern. However, it constitutes a real danger from a clinical-social standpoint, with the possibility of an easily mistaken diagnosis of tuberculosis of the lungs. This is a common mistake in such disease which clinically does not present any characteristic sign of bronchiectasis. Thus patients are often hospitalized in different sanatoria, with the stigma of tuberculosis which they do not have. They are unable to carry on their work, which could easily be continued with no danger either to themselves or their social environment.

As a general rule, therapy is unnecessary in the free periods, or restricted to normal balsamic or hemostatic and antibiotic (penicillin) treatment in the acute phase. In other cases, instead,

when hemoptyses occur at frequent intervals, one should try and modify, if possible, the local condition and reduce the danger of bronchial hemorrhage. In such cases it may be appropriate to make recourse to phrenico-exeresis so as to eliminate the diaphragmatic respiratory trauma which undoubtedly facilitates hemoptyses (E. Morelli). As a rule, pneumothorax would not be effective owing to the almost constant presence of pleuro-diaphragmatic adherences and to the concomitant state of pulmonary emphysema.

In some cases, when the symptoms become grave, lobectomy or pneumonectomy may be indicated; both can be easily performed today as a result of progress in anesthesia and thoracic surgery, but, as a general rule we are not inclined to suggest them, as in the case of obvious bronchiectasis, since bronchiectatic bronchiolitis is an abortive kind of bronchiectasis, generally not bound to extend or worsen, so that a major surgical operation would be out of proportion with the size of the lesion.

Antiluetic therapy is advisable when there are clear signs of hereditary or acquired syphilitic infection, and should also be followed, "ex juvantibus," in dubious cases.

Very important is psychic therapy, to relieve the mind of patients who are often upset, thinking they have chronic tuberculosis. In this connection, we wish to stress the importance that this syndrome be well known both to the general practitioner and the chest physicians, so as to contribute to early diagnosis and thus to the social welfare of whole families.

SUMMARY

The bronchoectatic bronchiolitis is a particular syndrome of dry hemoptoic bronchiectasis described by Omodei-Zorini, which differs from the Azoulay and Bezancón syndrome, by some essential features. The clinical symptomatology consists of a characteristic auscultatory finding, fixed and unchanging even after years, namely small bronchiolitic rales, localized in one or both posterior lung bases and extending laterally in bands.

At bronchographic examination, medium sized cylindrical dilatations of the small bronchi and a deep emphysematous-bullous alteration of the acinous-alveolar surrounding system, are disclosed.

The data supplied by the anatomo- and histopathological researches are still scarce, as said affection is of benign character, generally does not reach autopsy and does not require surgical intervention. But one case, operated lately by Prof. Valdoni, confirms the congenital origin of this affection, as well as the presence, together with the small cylindrical bronchoectasis, of a diffuse emphysematous-bullous status.

RESUMEN

Las bronquiolitis bronquiectasicas constituyen un tipo particular de sindrome de bronquiectasia seca hemoptoica descritas por Omodei-Zorini, que se diferencia del sindrome de Azoulay e Bezançon por algunos fundamentales caracteres. La sintomatología clínica está constituida por un cuadro auscultatorio, fijo y constante, aún despues de muchos años, de finos ruidos estertores que se localizan en una o en las dos bases pulmonares posteriores y que se extienden en forma de faja a ambos lados.

El examen broncografico revela dilataciones cilindricas de proporciones modestas de los bronquios pequeños y una profunda alteración enfisematoso-vesicular del sistema alveolar correspondiente.

La investigación anatomica e histopatologica no cuenta todavía con suficientes documentos, porque se trata de una afección benigna que no llega al examen de autopsia y no necesita de una intervención quirúrgica.

Un caso de neumonectomia operado recientemente por el prof. Valdoni afirma el origen congenito de la afección y la presencia de un estado enfisematoso y vesicular difuso, al lado de pequeñas bronquiectasias cilindricas.

RESUME

Les bronchiolites bronchectasiques constituent une syndrome particulières de bronchectasies sèches hémoptoïques décrite par Omodei-Zorini, qui diffère de la syndrome d'Azoulay et Bezançon par quelques caractères fondamentaux. La symptomatologie clinique consiste en un signe auscultatoire caractéristique, fixe et constant, même après des années, des fins râles bronchiolitiques, localisés à une ou à toutes les deux bases pulmonaires postérieures et qui s'étendent latéralement en forme de bandes.

A l'examen bronchographique l'on constate des dilatations cylindriques moyennes des petits bronches et une profonde altérations emphysématuse-bulleuse du système acyneux-alvéolaire environnant.

La recherche anatomique et hystopathologique n'a pas encore des données suffisantes à sa disposition, car il s'agit d'une affection bénigne qui ne parvient pas à la table anatomique et généralement ne nécessite pas une intervention chirurgicale. Toutefois un cas opéré dernièrement par le prof. Valdoni confirme l'origine congénitale de l'affection ainsi que la présence, à côté des petites bronchectasies cylindriques, d'un état emphysemateus et bulleux diffus.

Observations on Paragonomiasis at the Quezon Institute*

MIGUEL CANIZARES, M.D., F.C.C.P., F.P.C.S., F.I.C.S. and
JOSE CELIS, M.D., F.C.C.P.
Manila, Philippine Islands

The purpose of this paper is to present a review of the paragonimus cases seen at the Quezon Institute for the last five years. These cases the authors consider fairly representative of patients with lung fluke manifestations in the Philippines.

Paragonomiasis is sometimes called "Endemic Hemoptysis" because after a violent exertion or sometimes even without it attacks of hemoptysis of varying degree of severity occur. In 1877 this disease first became known to medical science. When a lung fluke was found in a tiger which died in the zoological garden at Amsterdam, Holland. The director, Westerman sent the specimen to Kerbert who, unable to identify it, named the species *Distoma westermani*. In 1879, a Portuguese in Tansui, Formosa, was found to have lung fluke when he died, and the specimen was forthwith sent to Manson who in turn forwarded it to Cobbald who named it *Distoma ringeri*. It was Leuchart (1899) however, who gave the lung fluke such a masterly description that subsequent observers have been unable to add to it or even modify it. It was he who established the fact that the material from both the tiger and the man belong to the same species. In 1899 Brown established the genus *Paragonimus* to include these parasites. Since that time various reports have been published wherein the parasites have been found in both man and animals and in different organs such as the brain, lung, scrotum, orbit, pleural cavity and mesentery. Ward and Hirsh by 1915 were able to establish three species of mammalian fluke, calling the tiger form *Paragonimus westermani*; the human form *Paragonimus ringeri*; and the forms found in dogs, cats and pigs, *Paragonimus hellicotti*. Since there was not sufficient grounds to justify separation of the lung fluke found in the tiger from that of man, the older name, *Paragonimus westermani* finally prevailed and up to the present has been considered as the representative species.

The disease caused by this fluke is considered a medical rarity

*Presented before the Sixteenth Annual Meeting of the American College of Chest Physicians, June 22, 1950, San Francisco, California, and at the First International Congress on Diseases of the Chest, Rome, Italy, September 21, 1950.

being present only in places where suitable intermediary hosts are found. Insofar as our own country, the Philippines, is concerned, two places stand out as endemic regions, namely, Samar and Leyte, the latter place being identified in the American mind as the spot where McArthur's forces of liberation first landed when they returned as promised to roll back the armies of Yamashita et al. All the patients presented in this review came from Leyte. They were all admitted as emergency bleeding cases.

Life Cycle

To better appreciate the difficulty of differentiating paragonomiasis from pulmonary tuberculosis from the purely clinical side, a fair knowledge of the life cycle of the fluke is both necessary and illuminating. In elucidating on the complete life cycle of the *paragonimus* we have to fall back on the contributions of Kobayashi and Yokogawa. It seems that the ova of the parasite are coughed up in the sputum and either expectorated or swallowed and passed out in the feces and subsequently becomes the source of infection of the intermediate host which happens to be a snail, species *melania*. The miracidium after escaping from its shell penetrates these snails and after a certain period metamorphoses into a small sporocyst and then into a cercaria. The cercaria soon escapes from the snail into the water and bores its way into certain species of fresh water crustaceans which act as the second intermediate host. These crustaceans when eaten raw or half-cooked soon liberate the encysted cercaria in the intestines where the young fluke soon bores its way through the wall and thus migrate through the peritoneal cavity and finally burrows through the diaphragm into the lung. Here they mature where they may be found in large numbers (in cases of autopsy) in funnel-like cavities or cysts lined by fibrous walls which communicate with the bronchi, giving rise to many of the pathological and clinical features of bronchiectasis. Here they may live for around six years. Less often, the fluke invades other tissues, including the liver, testes, prostate, lymph nodes, skin, muscle and brain.

Pathology

According to Musgrave, there are four recognized types of lesions: namely, the non-suppurative lesion, consisting of tissue infiltration by the eggs of the fluke and later followed by round cell and connective tissue infiltration; the tubercle-like type of lesion consisting of a fibrous wall with the parasite and its discharged products in the center; the suppurative lesion, recognized by the large destruction of the tissue cells in the lesion forming caseous material in the center; and the ulcerated lesion which is charac-

terized by partly successful healing in certain parts of the lesion. These lesions although mainly encountered in the lungs may be met within many other organs of the body. In the lungs, the more advanced cases may present a picture of generalized or acute cirrhosis with cystic dilatation of the bronchi and tubercle-like abscesses. Leucocytic infiltration occurs about the parasites and there is frequently fibrous encapsulation (Figure 5).

Symptomatology and Diagnosis

The symptoms generally begin with a dry cough usually more noticeable in the morning. The fits of coughing may result in expulsion of a peculiar rusty-brown or pneumonic-like sputum. Abdominal symptoms are mainly in the form of slight pains and diarrhea with bloody stools. In generalized infestation there may be infiltration of the systemic lymphatic glands. When lodged in the brain the parasites may cause a peculiar form of Jacksonian epilepsy which may lead to hemiplegia, aphasia, visual disturbances and monoplegia. Eosinophilia is an early sign. Diagnosis is readily made by finding the operculated eggs in the more or less sanguineous sputum. Charcot Leyden crystals are often present in the sputum. Eggs swallowed with the sputum may be found in the feces. Ando has described a Bordet Gengou complement-deflection test, using an extract of the adult form of the worm as antigen to aid diagnosis in obscure cases of the abdominal and cerebral types.

Treatment

The fact that various authors recommend different drugs without unanimity in the efficacy of any single one proves that its cure has yet to be discovered. Drugs suggested by various workers and tried out in the treatment of the different cases presented here are: emetine hydrochloride, recommended by Kobayashi and Ando, which is said to lessen the sexual activity of the trematodes as a group; lipiodol injection into the bronchi as advocated by Bercovitz; prontosil as reported by Yokogawa, and Fuadin as suggested by some parasitologists we consulted on the theory that being effective in Schistosomiasis it may prove equally effective in paragonomiasis considering the many similarities between the causative organisms of the two diseases.

Case Reports

Case 1: E.E., 30 years old, female, single, Filipino, school teacher from Burauen, Leyte, was admitted to the Quezon Institute on June 24, 1948, with hemoptysis ($\frac{1}{2}$ sp. cup), chest and back pains. For the past eight years before admission she had been having distressing cough productive of rusty-brown expectoration. Chest and back pains were dull most

of the time. Four years before her admission she had her first hemoptysis amounting to about one fluid ounce of fresh blood, the attack occurring every day for a week. Sometime before admission she had an attack of diarrhea characterized by a mixture of fresh blood and mucus and accompanied by slight tenesmus. The family history was non-contributory. Physical examination failed to reveal anything of moment. Inquiry into the personal habits led to a tacit admission that she was very fond of eating raw fish and half-cooked crabs and other crustaceans. Blood examination revealed an eosinophilia of 10 per cent and a sedimentation rate of 63 mm. after the first hour. Her sputum was heavily laden (3 plus) with *paragonimus ova* and was persistently negative for acid fast bacilli, and so were the results of three gastric washings.

Roentgenologic appearance of x-ray films was much like that observed in pulmonary tuberculosis of the productive type.

Fuadin was administered for a period of 15 days or a total of 40 cc. of the preparation which is equivalent to 340 mg. of antimony. After this series sputum examination revealed ova to be still in abundance. Lipiodol was then instilled intra-bronchially (10 cc.). A little later sputum was examined and the ova present was much reduced from a reading of 3 plus to 1 plus. Encouraged by this result we gave a second instillation two weeks later and three days after had the sputa examined again. This time reading was again 3 plus. Another two weeks and another instillation. One week later sputa when examined still showed 3 plus ova. By this time she was symptom-free and sought discharge. Although symptoms were abated markedly, treatment was pronounced unsatisfactory.

Case 2: C.T., 23 years old, a female, single, Filipino, laundry woman by occupation, coming from Ormoc, Leyte, admitted to the Quezon Institute on July 23, 1948, complaining of cough accompanied by blood streaked sputum. She had been having blood streaked sputa every now and then since the age of seven without any accompanying constitutional symptom. Four days before admission she had another severe cough with blood streaks again noticed in the sputum. No other constitutional symptom accompanying. Family history was non-contributory. Physical examination revealed impaired resonance over the interscapular spaces. Blood analysis revealed moderate anemia and marked eosinophilia (13 per cent). Sputum was 4 plus for ova of *paragonimus*, but persistently negative for acid-fast organisms on concentration method. Gastric washings also were negative. Roentgenologic examination showed shadows similar to the fibrotic and the nodose types of pulmonary tuberculous infection mixed with cyst-like shadows at the base. She was given Fuadin alone, receiving 16 cc. of the drug or an equivalent 136 mg. of antimony—the basic ingredient. Because of severe vomiting we were unable to give the full suggested dose of 40 cc. at the least. After a reasonable lapse of time we tried to resume treatment but with recurrence of vomiting more intense than the first time we were forced to abandon the treatment. On discharge she was symptom-free but with ova of parasite still present in sputum.

Case 3: M.B., a 40 year old male, married, Filipino, barber by occupation. Came from Dulag, Leyte, and was admitted as a bleeding case on October 13, 1947. His first attack of hemoptysis occurred three years before admission. Between then and the date of admission he had attacks

of cough accompanied every now and then by either chest or back pain and occasionally by both. His father died from tuberculosis. He confessed to a weakness for raw fishes. Physical examination revealed a reducible right inguinal hernia and no more. Blood examination showed an eosinophilia of 8 per cent and a sedimentation rate of 43 mm. after the first hour. Sputum on routine examination revealed ova of paragonimus in big numbers. Roentgenological examination revealed lung findings similar to that seen in exudative types of pulmonary tuberculosis, with cyst-like shadows surrounded by perifocal exudates in the region of the left hilum. After three injections with prontosil in doses of 5 cc. intra-gluteally he went home against medical advice. Force of necessity induced him to leave the hospital post-haste. Being the bread winner in a family of six (wife and four children) and not feeling anything untoward except for the one and only attack of hemoptysis which had subsided readily, he felt that he could not tarry too long in the hospital.

Case 4: M.G., a 20 year old female, single, Filipino, school girl, coming from Baybay, Leyte, was admitted on September 13, 1948, with hemoptysis (four tablespoonsfuls) as main complaint. Her father and one brother died from pulmonary tuberculosis within six months of each other. No other important item in family history. Physical examination revealed nothing abnormal. Blood examination showed eosinophilia of 10 per cent and a sedimentation rate of 35 mm. after first hour. She received injections of emetine hydrochloride $\frac{1}{3}$ gr. daily for six continuous days, followed by another six-day series after a brief three-day period of rest. After this medication sputum formerly 3 plus for ova of parasite became negative.

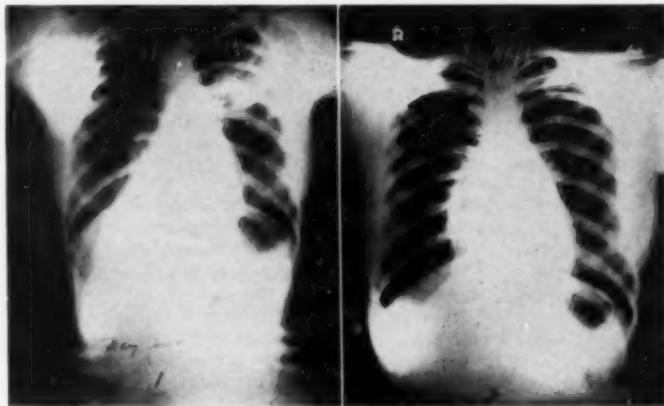


FIGURE 1

FIGURE 2

Figure 1: X-ray film taken on admission reveals densities involving IS-1, 2 and 3 anteriorly. Sputum heavily positive for ova of paragonimus.—*Figure 2:* X-ray film taken one week after admission. Patient has received only emetine hydrochloride injections ($\frac{1}{3}$ gr. daily for six days). Opacities still visible at IS-1 anteriorly. Discharged at this point. Sputum negative for ova of paragonimus.

Feces likewise were negative. Even the x-ray film showed appreciable diminution in the number of cyst-like shadows which we have come to associate with the disease. She was discharged after a three weeks stay in the hospital but has been coming regularly for sputum and radiographic control ever since. The last time she came for check-up was on October 29, 1949; her sputum was still negative for ova and x-ray film taken at the time showed further absorption of the perifocal exudates (FIGURES 1, 2, 3 and 4).

Case 5: E.M., a 22 year old single male, Filipino, laborer, coming from Jaro, Leyte, was admitted on December 19, 1949, with complaints of blood streaked sputum, cough, and backache. Nine months ago he noticed blood streaks in sputum. Two days later he submitted to a fluoroscopic examination in a private x-ray center and was told to seek hospitalization. One week later he was admitted in the San Lazaro Hospital where he was treated as a case of tuberculosis and given PAS tablets. He stayed there for eight months and received a total of about 400 gm. of PAS. He was discharged as much improved. One month later he had a recurrence of the hemoptysis for which reason he was admitted to the Quezon Institute. Five routine sputum examinations failed to reveal either acid-fast organisms or ova of parasites. Bronchial aspirations, however, when smeared, showed the paragonimus ova, but in such scanty numbers that it was seen only on re-check by a senior technician. Once the nature of the disease was made known to him, he indicated a desire to be treated by a parasitologist of his choice and thereby sought immediate discharge from the hospital, but not before the usual blood tests and radiographic examinations had been concluded. As usual the blood examination re-

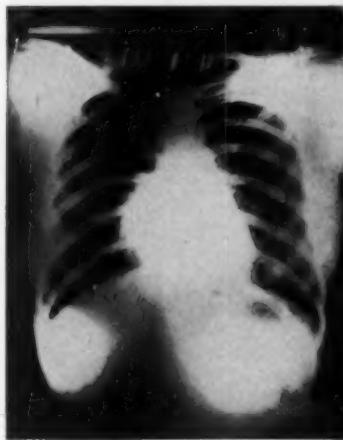


FIGURE 3

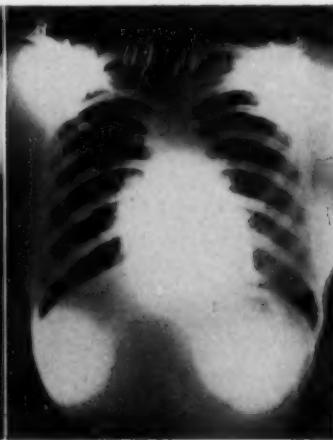


FIGURE 4

Figure 3: X-ray film taken one month after discharge shows nothing new radiographically.—Figure 4: X-ray film taken three months after discharge. Up to this point there has been no recurrence of symptoms, and sputum has remained free from ova.

vealed eosinophilia 8 per cent, and sedimentation rate of 33 mm. after the first hour. X-ray film inspection showed the cyst-like shadows so frequently seen in this disease.

SUMMARY

It would be presumptuous to draw conclusions on the basis of such meager data as we have so far on hand. But for those who care to follow whatever lead may be hinted in this article it may not be amiss to recapitulate the basic features encountered by us during our observations of these cases.

There seem to be three main features shared by all the patients included in this study, namely, the origin of the patient, which is the Island of Leyte on the southeastern part of the Philippines, and the common presenting symptom for which they were confined to the Quezon Institute, which is hemoptysis.

No two of the five cases presented received the same treatment. One was given Fuadin injections alone, another both Fuadin and

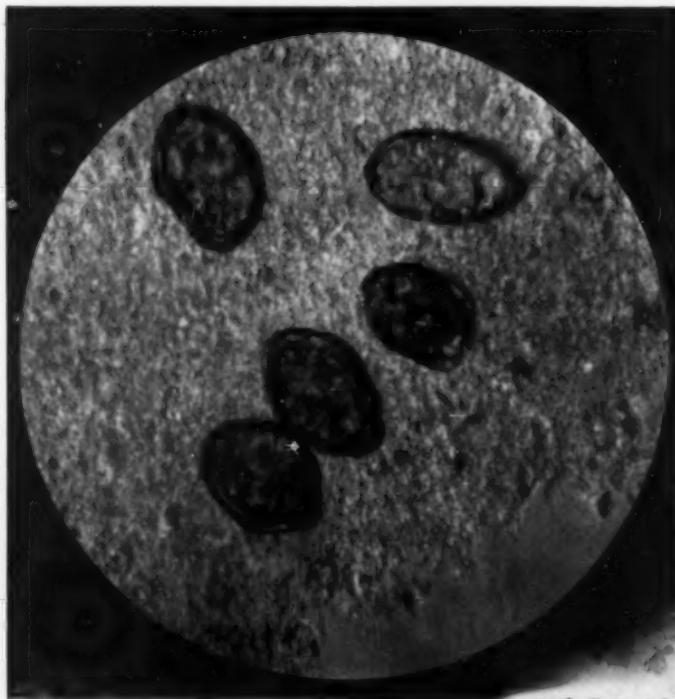


FIGURE 5: Eggs of the *paragonimus westermani*. L.P. x 430.

Lipiodol, a third Prontosil, a fourth emetine hydrochloride, and one received no treatment in the hospital because of an expressed desire to be treated by a private physician of his own choosing. All told only the patient who received emetine hydrochloride injections manifested clinical cure. This is by no means a blanket indorsement of emetine as the best remedy for these lung-fluke infestations but it does pave the way for further studies on this interesting disease which in our opinion deserves to be included in Dr. King's list of conditions giving rise to roentgenographic shadows (pp. 536-38, October 1949 issue of the American Review of Tuberculosis), similar to that of tuberculosis.

RESUMEN

Sería presuntuoso sacar conclusiones basadas sobre datos tan escasos como los que contamos al presente. Pero para aquellos que deseen continuar los estudios que se sugieren en este artículo, no sería demás recapitular los rasgos básicos que encontramos en nuestras observaciones de estos casos.

Todos los pacientes con Paragonimiasis incluidos en este estudio parecieron presentar dos rasgos principales, a saber: el origen del paciente, que fue la isla de Leyte en la parte sureste de las Filipinas, y el síntoma común que presentaron, y por el cual fueron hospitalizados en el Instituto Quezón, que fue hemoptisis.

Todos los cinco casos recibieron tratamiento diferente. A uno se le dieron inyecciones de Fuadin solas, a otro Fuadin y Lipiodol, a un tercero Prontosil, a un cuarto hidrocloruro de emetina y uno no recibió tratamiento en el hospital debido a su expreso deseo de ser tratado por un médico particular de su propia elección. Solamente el paciente que recibió hidrocloruro de emetina manifestó una curación clínica. No constituye esto una sanción absoluta de la emetina como el mejor remedio para estas infestaciones con lombrices pulmonares, pero si allana el camino para estudios adicionales de esta interesante enfermedad que, en nuestra opinión, merece ser incluida en la lista del Dr. King de estados que causan sombras roentgenográficas semejantes a las de la tuberculosis (páginas 536-38, Octubre 1949, American Review of Tuberculosis).

RESUME

Il serait présumptueux de tirer des conclusions sur des cas aussi peu nombreux que ceux que nous avons en notre possession, mais il nous a semblé intéressant de récapituler, pour ceux qui se tiennent au courant de ces questions, les faits que nous avons pu observer.

Il y a des facteurs capitaux qui sont propres à tous les malades compris dans cette étude: leur origine, tous les malades provenant

de l'Ile de Layte à la partie sud-est des Philippines, et le symptôme commun pour lequel ils furent adressés au Quezon Institute: l'hémoptysie.

Aucun des malades, sur les cinq cas présentés, n'eut le même traitement. L'un eut de simples injections de "fuadine," un autre de la "fuadine" et du lipiodol, les troisième du prontosil, le quatrième de l'hydrochloride d'émétine, et le dernier ne subit aucun traitement, car il désirait être traité par un médecin privé de son choix. Seul le malade qui reçut des injections d'émétine obtint une guérison clinique. Ceci ne signifie pas que l'on peut admettre que l'émétine est le meilleur traitement de cette affection, mais cela doit ouvrir la voie à des travaux ultérieurs pour cette affection intéressante, qui mérite d'être incluse dans la liste de celles dont les ombres radiologiques simulent la tuberculose.

Chronic Constrictive Pericarditis*

(Medical Aspects)

C. L. C. VAN NIEUWENHUIZEN, M.D.
Utrecht, Netherlands

The data of facts and considerations that are of essential importance with regard to the diagnosis of chronic constrictive pericarditis and with regard to the indication for surgery are based on an examination of 39 patients who displayed symptoms of:

- (a) chronic constrictive pericarditis (35 cases),
- (b) chronic pericarditis with effusion (three cases), and
- (c) carcinosis of the pericardium (two cases).

Thirty-four of these patients were operated on by our team.

I. Etiology.

In each operated patient the pericardium was subjected to a pathological examination, which was mostly done by our pathologist De Roo. Carcinoma was found in two cases, both starting from bronchial carcinoma. One of these cases was quite clear; but in the other the carcinoma was not found until after careful examination of the lungs. In this case the diagnosis was already made before operation in connection with the findings of a cytological examination of the puncture fluid of the pericardium. In one other case there were still tubercle bacilli present in the pericardium. In spite of the certainty that we were here faced with an active tuberculous process, this patient was operated on owing to extreme venous congestion at a time when we had not yet streptomycin at our disposal (August 1944). His recovery was uneventful, and he was afterwards able to continue work uninterrupted.

In four cases, tubercles could be demonstrated in the removed pericardium. In 11 cases calcium was found, either with the aid of x-rays or by means of the microscope.

In this case and in most of the others the pericardium displayed three strata, viz:

- (a) a layer of vascular adipose tissue,
- (b) a broad layer of fibrous hyaline degenerated tissue, without cells, and of lamellar structure,
- (c) a layer of granulation tissue without cells.

*From the Heart Team of the Saint Anthonius Hospital, Utrecht, Netherlands. Presented at the First International Congress on Diseases of the Chest, Rome, Italy, September 20, 1950.

Between (a) and (b) round cells, mostly lymphocytes, were observed in varying quantities.

We must make special mention of the findings of the pathological examination in the case of one of our youngest patients, a boy aged 12, where a large quantity of eosinophile cells was observed in the pericardium.

In many cases the pericardial tissue was inoculated into guinea-pigs; however, positive results were never obtained.

Thus in our cases a tuberculous etiology was certain in one, and probable in four, it was not possible to determine etiology of the others. In these cases we cannot get further than a diagnosis of chronic proliferative pericarditis, although with Holmes Sellors we think it probable that they were due to remnants of an earlier active tuberculous inflammation, because it is these which may give rise to such a pathological picture. This view is supported in the first place by the frequent occurrence of calcium in the pericardium, and in the second by cases such as White describes, where at the first operation tubercles were still found, while at the second only chronic proliferative inflammation was observed.

Therefore we are of the opinion that in most cases tuberculosis must be looked upon as the cause of chronic constrictive pericarditis, while rheumatism seldom (or, probably never) is the cause. In a few of our cases it must be attributed to streptococcal infection (one following erysipelas, and one after sepsis). This opinion is moreover corroborated by the past history of the disease and by the general examination of the patients with constrictive pericarditis.

In 12 cases the chronic constrictive pericarditis was preceded by pleurisy, mostly on the left. We also found: spondylitis or tuberculosis of the joints (five cases); urogenital tuberculosis (three cases); iridocyclitis (one case); peritonitis tuberculosa (three cases); lymphadenitis tuberculosa (two cases) and caseating mediastinal lymph nodes observed at autopsy in two cases.

It is not rare to see such localizations arising after each other in the same patient; curiously enough pericarditis is mostly the last localization, unless generalized tuberculosis or meningitis concludes the series.

Sometimes there is a period extending over some years between pleurisy and the first symptoms of chronic constrictive pericarditis; we are even acquainted with a case where this period lasted 29 years.

We must, therefore, believe that in the majority of cases chronic constrictive pericarditis is the result of a lymphogenic (or perhaps, haematogenic) dissemination, arising from the tuberculous inflamed mediastinal nodes, the so-called "benign disseminators."

This would account for the attendant tuberculous localizations, which are never found in the lung itself, but in the bones, the kidneys, the epididymis, or the iris.

This view was already described minutely by Willius in 1902. But in view of the notable eosinophilia of the above-mentioned case, we would allow the possibility that the pericardium may develop an allergic response in the form of proliferative inflammation, probably owing to the toxins of the tubercle bacillus, and this may perhaps explain the fact that in these cases no tubercles or tubercle bacilli are found.

Thus the patient with constrictive pericarditis must undergo a general and detailed examination, particularly with a view to tuberculosis, and attempts should be made to culture tubercle bacilli from sputum, stomach washings, urine, and puncture fluids.

Our experience teaches us that prognosis is unfavorable for patients with severe concomitant renal tuberculosis, even when the kidney still functions properly. Although the operation itself is borne well, we have not seen a cure of disease of the kidney.

II. Diagnosis.

Diagnosis is not only based on roentgenological and electrocardiographic findings, but particularly on proving the existence of generalized venous congestion. It is best measured according to the direct method of Moritz and Tabora, and expressed in millimeters of water with 100 mm. taken as the upper limit for normal values. Mechanical venous congestion can also be demonstrated, however, in those cases where the venous pressure is at first only moderately increased. All one has to do is to ask the recumbent patient (who is connected up with the apparatus) to pull up his knees 15 times, after which the course of the venous pressure is followed for 10 minutes.

In normal circumstances only a slight increase of venous pressure is observed, the rest value being reached again within half a minute, followed by a drop below this value. Already in 1936 we looked upon this decrease as an "overcompensation" of the large veins before the heart, which responds to an increased venous supply by dilating, so as to keep the minute volume within normal limits.

In cases of mechanical congestion the increase of the venous pressure during and immediately after exertion is great, 70 per cent of the rest value not being rare; and this value is reached much later, often not even after 10 minutes, though in most cases after four to six minutes. In our youngest patients (aged nine and 12) mechanical congestion could not be demonstrated in this way; this was probably due to the greater elasticity of the venous

system. The rise is caused by an increased venous supply on top of an already existing venous congestion, but the retarded return to the rest value must also be attributed to sclerosis of the walls of the veins, consequent upon long-standing venous congestion. This phlebosclerosis could be demonstrated by us pathologically.

The mechanical congestion curve is especially important in those cases in whom the venous pressure has hardly increased or not at all, and where on account of other findings the possibility of chronic constrictive pericarditis must be considered.

I have the impression that patients with strong venous congestion after exercise stand a good chance at operation; and those without a clear venous congestion after work are suffering from insufficiency of the heart muscle, owing to the long-standing constriction.

The determination of the circulation velocity of the blood has so far not given us any reliable data for diagnosis or prognosis. This velocity may be normal or retarded, which probably depends chiefly on the size of the heart and the degree of pulmonary congestion.

In most cases the electrocardiogram is characteristic: a low voltage, with a concordant reduction of ST in all standard leads. It is possible that rapid recovery of the electrocardiogram findings to normal after the operation may prove to be of prognostic value. While I wish to point out the importance of careful roentgenological and kymographic examination, I would particularly draw your attention to the results of heart catheterization and angiography.

Heart catheterization taught us that in the cases, so far examined, the mean pressure is highest in the pulmonary artery, it is somewhat lower in the right ventricle, somewhat lower still in the right auricle, and equally high in the vena cava superior. Naturally all these values are already increased in themselves. The equal pressure in the right auricle, and in the vena cava superior and inferior is important, as it corroborates the view which we share with Blalock, Churchill and others, that it is quite unnecessary to free the auricles, or even the vena cava with all the attendant risks.

Angiocardiography shows us the same things, in a different way: so far we had never succeeded in demonstrating a serious constriction at the spot where the vena cava superior enters the right auricle. On the contrary, the vena cava superior is usually considerably dilated, and may be seen at the right border of the heart-shadow. Angiocardiography may further be useful to determine the density of the pericardium, and to investigate the interrelation of the ventricles. On one occasion this method was

used when investigating the possibility of a postoperative aneurism of the ventricular wall.

Summing up, the examinations which are important for patients of chronic constrictive pericarditis, are the following:

- (1) Complete physical examination, including culture of bacilli from the sputum, stomach washings, urine, and puncture fluids.
- (2) Determination of temperature, sedimentation rate, reaction of Von Pirquet and Mantoux in connection with possible activity of the tuberculous process.
- (3) Determination of the venous pressure at rest and after exercise.
- (4) Heart catheterization and angiocardiology.

It is moreover requisite that before operation the lung functions be tested; this is particularly desirable when an emphysema is present at the same time or when remnants of pleurisy can be demonstrated. Next the liver functions should be tested in order to ascertain the degree of their deterioration in consequence of chronic congestion. Our experience has shown, however, that in almost all cases the liver function recovers completely after a successful operation.

III. Indication for Operation

Generally speaking, operation is always indicated when general venous congestion can be demonstrated, and especially when a distinct mechanical congestion curve can be established.

When in doubt between operation and its postponement, in connection with possible activity of the process, the operation should be performed, especially now that the protection of streptomycin and PAS diminishes the risks. When one adopts a waiting attitude, the dangers of injury to the heart muscle increase. We are now convinced that it is profitable to proceed to an operation as early as possible: we never observed complications as a consequence of operative intervention in an active specific process.

As contra-indications we may mention:

- (1) Severe emphysema, or greatly diminished functions of the lung from other causes.
- (2) Generalized peripheral tuberculosis, particularly renal tuberculosis.

Our experience has shown that the patient's age is not of great importance; the youngest patient was nine years old, but two patients were over 50, the oldest was 61, and after the operation she became quite fit again.

- (3) It is possible that operation may be contra-indicated in those cases where the above examinations lead us to ex-

pect that the myocardium cannot dispense with the support of the pericardium.

Investigations of Bijlsma, Lehieux, Tjia and Nelemans in Utrecht have shown that the pericardium supports the myocardium in danger of failure by means of a higher diastolic initial pressure caused by counter-pressure; it also furnishes protection against acute over-dilatation. In this manner the minute-volume may remain equal at a higher arterial pressure, or at an equal counter-pressure it may become greater than would be possible without a pericardium. It is true that in experiments with animals, a heart without pericardium behaves in the long run as if it still had a pericardium, but it may be conjectured that the loss of a thickened pericardium is required by the myocardium with irreparable dilatation, thus causing progressive decompensation.

As a matter of fact, we lost some patients, owing to progressive decompensation sooner or later after the operation. At the present moment, however, I am not in a position to suggest any definite criteria that might lead to such contra-indication. I may say, however, that on one occasion these considerations have led us to leave the visceral pericardium in its place, when it was possible; it was thin, but displayed fibrous changes. So far it has proved a success.

SUMMARY

- 1) In the majority the chronic constrictive pericarditis is of tuberculous aetiology and we have to take into consideration the possibility of other localizations; therefore a careful general examination is necessary.
- 2) Diagnosis is chiefly made on general venous congestion, especially if it can be demonstrated in the form of a mechanical congestion curve after exercise.
- 3) Heart catheterization, angiography and experience showed that the atria and venae cavae need *not* be liberated.
- 4) Most important of all: in order to avoid irreparable damage of the myocardium, one has to operate as early as possible, even if the process is still more or less active. On the other hand it may be wise not to operate in cases, where we expect that the myocardium cannot dispense with the support of the pericardium, or, to leave the visceral pericardium in its place, but that will be possible only in a few cases.

RESUMEN

- 1) En la mayoría de los casos de pericarditis constrictiva crónica, la etiología es tuberculosa por lo que hay que tener presente la posibilidad de otras localizaciones.

2) El diagnóstico se hace principalmente por la congestión venosa generalizada sobre todo si se puede comprobar la congestión venosa mecánica en forma de una curva de congestión mecánica después del ejercicio.

3) La cateterización del corazón y la angiocardiografía han mostrado que los atrios y las venas cavae no necesitan ser liberadas.

4) Lo más importante: Para evitar daño irreparable al miocardio se tiene que operar lo más pronto posible, aún si los síntomas son más o menos activos. Por otra parte es prudente no operar en los casos en que puede esperarse que el miocardio no pueda pasarse sin el soporte del pericardio o bien dejar el pericardio visceral en su lugar, pero esto no es posible sino en pocos casos.

RESUME

1) Dans la majorité des cas, la péricardite constrictive chronique est d'étiologie tuberculeuse, et il faut compter avec la possibilité d'autres localisations. C'est pourquoi un examen général minutieux est nécessaire.

2) Le diagnostic est principalement basé sur la congestion veineuse généralisée, en particulier si on peut démontrer son existence par l'enregistrement d'une courbe de congestion mécanique après effort provoqué.

3) Le cathétérisme cardiaque, l'angiocardiographie et l'expérimentation ont montré qu'il n'y a pas besoin de libérer les oreillettes et les veines caves.

4) La notion qui domine la question est que, pour éviter une insuffisance irréparable du myocarde, on doit opérer aussi tôt que possible, même si le processus est encore plus ou moins actif. D'autre part, il peut être prudent de ne pas opérer dans les cas où l'on peut présumer que le myocarde ne pourra supporter l'absence de péricarde. On pourra alors essayer de laisser le péricarde viscéral en place, mais cette éventualité ne sera réalisable que dans un petit nombre de cas seulement.

Chronic Constrictive Pericarditis*

(Surgical Aspects)

M. C. A. KLINKENBERGH, M.D., F.C.C.P.
Utrecht, Netherlands

Chronic constrictive pericarditis can be diagnosed in a positive and simple manner, a resection of the diseased pericardium has definitely put an end to a marked or menacing invalidity. The operation has become sufficiently safe to be recommended to patients.

Operations of the pericardium, which have inaugurated the whole science of intrathoracic surgery, have themselves later on profited by the great progress made by modern intrathoracic surgery and by the technique and forms of modern anaesthesia.

Before proceeding to the question of resection of the pericardium, the point should be raised whether the removal of the pericardium is permissible. For the pericardium has, no doubt, several important functions. In the first place it enables the heart to move smoothly by lessening frictional resistance. Next it plays a defensive part against external injuries but also against violent dilatation of the heart (in forced coughing or an explosion). But of greater importance is its aid and support of the heart's action.

It now appears quite certain that almost the whole pericardium may be removed without involving danger to life. Incidentally—in an autopsy of some people who apparently had always been in good health—complete or partial aplasia of the pericardium was found. In animals the whole pericardium has been removed without any subsequent symptoms, even in cases where the animals were subjected to severe tests of strenuous work. Nowadays it occurs regularly that the surgeon opens or removes pieces of the pericardium with impunity. This does not imply that it serves no purpose at all. Everything in the human body has its reasonable ground and the pericardium even a very special and significant one. But the loss of the pericardium may be counterbalanced and consequently the body can do without it if resection is indispensable.

Principle of the Operation

The principle of the operation is the removal of the cortex that encloses the myocardium—its decortication—in which the auricles

*Presented at the First International Congress on Diseases of the Chest, Rome, Italy, September 20, 1950.

and orifices of the veins should be treated with the utmost care.

Chronic constrictive pericarditis is an internal symphysis of the heart, characterized by the development of a progressive fibrosis which encloses the myocardium, otherwise normal, in a covering which in certain cases is calcified. This carapace implies the impossibility for the heart to dilate, so an a-diastole.

One of the fundamental points is that the cardiac muscle is practically normal in nearly every case. The myocardium is not diseased and is potentially sound, though it may be seriously atrophied by inactivity. But any muscle atrophied by inactivity may recover its strength and the cardiac muscle probably faster than a skeletal muscle. It is the scarred mantle, often reinforced by encrusting calcification, which strangulates the movements of the heart, especially the diastole. This sheath, which is formed by thick cicatrix-tissue shares the properties of this tissue; the absence of elasticity (cicatrix-tissue has no elastic fibres) and the fatal cicatrix-contraction, which progresses slowly and will, in due time, compress the heart.

Just as strictures and stenoses occur in an old burn of the arm or on the intestine (after intestinal tuberculosis) there is cicatricial contraction of the heart; it is an enclosed heart under compression (chronic tamponade). It is easy to understand that pericarditis develops slowly but steadily and almost inevitably results in death, unless an operation is resorted to, since the compression and strangulation of the heart-movements can only be removed by direct excision of this scarred pericardium. Operation is the only treatment and it is absolutely effective if performed in time.

The operation falls into two parts: first the making of an incision in the thoracic wall to expose the heart sufficiently for the operation, and second the removal of the mantle that envelops the heart, while as a third point we want to stress the importance of postoperative care.

Opening the Chest

I. Local anaesthesia has been totally superseded by intratracheal anaesthesia since the pleura has to be opened and the operation may occupy a long period of time. Practically all the older authors started with local anaesthesia. All modern authors have adopted anaesthesia by means of a closed system with oxygen and nitrous-oxide or cyclopropane, this is combined with curare and, at discretion, attended with controlled respiration.

Also regarding the choice of access great progress has been made. We want an opening which exposes the heart from the apex to its base. Formerly, and it is still often done, many authors made a horseshoe incision, parasternal, to the left. This incision

is correct, but large and takes a long time, but what is worse; it leaves a considerable gap in the structure of the thoracic wall through which palpitations of the heart will always be visible beneath the skin; besides it is disfiguring, especially in women.

In using the new way of approach we profit by the working-methods of pulmonary surgery. This incision of 10 to 12 cm. which is rectilinear or slightly curved follows the fourth intercostal space to the left, while in the case of women we make the incision below the fold of the breast, a little lateral to the sternum; the fibres of the pectoral muscle are to be severed, the intercostal muscles are cut and the mammary artery and vein are ligated. The fourth and fifth costal cartilages are cut close to the sternum and a powerful retractor fully distends the ribs, which leaves a sufficient aperture. Nothing is removed, neither cartilage nor rib, which allows of a better reconstruction of the thorax. Median sternotomy is never used in our technique. We do not need it as we never decorticate the right auricle.

One of the outstanding developments in surgical technique is abandoning of the formerly used extrapleural way for the deliberately chosen transpleural way, which allows a more extensive removal of the diseased pericardium beyond the phrenic nerve.

II. After opening the chest and exploring the pericardium we start with the decortication, which should extend over almost two-thirds of the circumference of the heart and especially liberate the two ventricles. Without any fear of heart failure we proceed to decortication over the right ventricle, and from there we pass on to the left ventricle.

It is not necessary to liberate either the auricles or the caval or pulmonary veins. Angiocardiographic studies before and after operation showed us that the stasis of the blood in the large vessels of the base of the heart is caused by the insufficient re-refilling of the ventricles, not by constriction of the entrance of the caval veins. It has been found that even when the vena cava at its entrance had but the circumference of a lead pencil, there would be a sufficient flow of blood if the ventricles could be filled again. Heart catheterization strengthens us in this opinion. We never found a difference in blood pressure in the caval vein and in the right auricle which might be expected if it were difficult for the blood to pass into the auricle.

The apex of the heart, which may be firmly attached to the diaphragm, should in all cases be exposed, otherwise the contraction of the ventricles might be interfered with; for the heart should be in such a position that it can contract longitudinally to ensure an ideal circumvolution.

The pericardium is always to be removed in fragments, which

before their resection may serve as tractors. In case of a haemorrhage caused by an injury to a coronary artery or even a perforation of the heart, the wound may be covered with these pericardium flaps. The surgeon should never forget that he operates upon an organ that is in constant motion, and, besides, an organ that is highly sensitive to external influences which may cause irregular contractions, tachycardia, even fibrillations or arrest of the heart. The more gently the operation is performed the fewer reactions there will be. The manipulations should be performed at intervals in order to relieve the cardiac muscle; these pauses are part of the technique, and one ought to take into account that the relief does not commence until the heart resumes its normal rhythm.

Nowadays the intravenously given procaine is a great help to the surgeon when manipulating the heart. The reaction caused by the stimulants are less severe.

III. After the operation draining is necessary, for the raw surface of the myocardium and the neighbouring ribs always brings about an abundant oozing of blood and especially of lymph. A considerable quantity of fluid is accumulated in the precordial space and but for the draining the heart would again be compressed, but now there is not a chronic but an acute tamponade. Therefore draining is necessary. However as external draining is dangerous, it has been superseded by internal draining: pleuro-pericardial.

Through the decortication of the ventricles a large communication is effected between the pericardial space and the left pleural space. The fluid accumulates at the back in a costophrenic sinus. The effusions can be easily observed by means of x-ray films and the puncture can be made in the back. It often happens that some pints of a haemorrhagic fluid have to be removed. Sometimes patients become dyspneic and anoxic but they feel at once relieved after the aspiration of the fluid. In general two or three punctures suffice. The remainder of the fluid is absorbed by the pleura and there are cases where a mild jaundice, caused by the resorption, manifests itself. Naturally such a quantity of fluid has sometimes resulted in death after a skillfully performed operation. Therefore careful postoperative observation is necessary.

It is also important to know that these patients need oxygen very badly the first days after the operation. The oxygen may be administered by oxygen-tent, nose mask or nose catheter. In its need of oxygen for good functioning, the heart comes second only to the central nervous system. According to researches by L. Binet a muscle is able to double its function under an atmosphere of 40 to 50 per cent oxygen and recover much faster. So oxygen should be liberally applied. As in cases of chronic pericarditis the volume

of blood increases from 30 to 40 per cent, care should be taken in administering blood, serum or salt solutions. A small quantity of blood or plasma will be sufficient to prevent postoperative shock. Nevertheless blood transfusion must sometimes be given to combat hypoproteinemia, which is apt to arise especially in those cases where ascites brought along loss of proteins. This is even worse when several punctures of the abdomen were necessary before operation. Loss of proteins and vitamins favors complications and retards the healing of tissue.

In general the results of skillfully performed pericardectomies are among the most interesting in the field of surgery. They range from disappointment to something spectacular. The cure manifests itself in a lower pulse, an increase in diuresis, the disappearance of oedema and ascites. The results are not always immediately apparent after the operation. We may have to wait months or even a year before we can see any definite results. The operation is performed in comparatively too limited a number of clinics, which is to be explained by the fact that the disease is not properly diagnosed but often mistaken for cardiopathies or liver-cirrhosis.

SUMMARY

Interventions on the pericardium are to be included among the first intrathoracic operations. They have greatly benefited from the advances made by modern intrathoracic surgery.

Anesthesia is not effected any more by local infiltration of the walls, but by intratracheal general narcosis. The former horse-shoe shaped incision, resecting 3-4 ribs, is now rectilinear and intercostal: the deformation of the thorax is considerably reduced.

Decortication is effected on the two-thirds of the heart circumference, and only of the ventricles. As inner pleuro-pericardic drainage is made; effusions are aspirated by pleural puncture. The results although satisfactory, are not always immediate.

RESUMEN

Las intervenciones sobre el pericardio deben incluirse entre las primeras operaciones intratorácicas. Estas intervenciones se han beneficiado grandemente con los adelantos de la cirugía intratorácica moderna.

La anestesia ya no se hace por infiltración local sino con anestesia general intratraqueal. La antigua incisión en herradura, resecando 3-4 costillas es ahora rectilínea e intercostal; así la deformación torácica se ha reducido considerablemente.

La decorticación se efectúa en los dos tercios de la circunferencia del corazón y solo de los ventrículos. Se hace una canalización

interna pleuro-pericárdica y los derrames son aspirados por pun-
ción pleural. Los resultados aunque son satisfactorios, no son
inmediatos.

RESUME

Les interventions sur le péricarde ont été parmi les premières opérations intrathoraciques.

Actuellement, elles bénéficient des progrès de la chirurgie thoracique moderne. On ne fait plus l'anesthésie locale par infiltration des parois, mais l'anesthésie par intubation. L'incision que l'on faisait autrefois en fer à cheval avec résection de trois ou quatre côtes, est maintenant rectiligne, intercostale, et permet une meilleure reconstitution du thorax.

La décortication est faite sur les deux tiers de la superficie cardiaque, et n'intéresse que les ventricules. On fait un drainage interne pleuro-péricardique et les épanchements sont aspirés par ponction pleurale. Les résultats sont bons, mais ne sont pas toujours immédiats.

Neurogenic Tumors of the Posterior Mediastinum*

CESAR RODRIGUEZ, M.D., F.C.C.P.,† VICTOR BRITO A., M.D.††
and L. POTENZA, M.D.†††
Caracas, Venezuela

There is a unanimous accord that neurogenic mediastinal tumors are rare. Thompson¹ also reached this conclusion after a careful search of the literature. Conversely, there is a divergence of opinion regarding the incidence of malignancy of such tumors. Kent and Blades² found 41 per cent malignancy in their series of 18 cases of intrathoracic neurogenic tumors. On reviewing the literature these authors found that out of 105 intrathoracic neurogenic tumors, 74 were mediastinal, 15 being malignant and 59 benign.

Thompson³ presented figures showing malignancy between 10 and 20 per cent. D'Abreu⁴ found no malignancy in seven cases. Our six cases were all benign.

From this brief resumé it is evident that a divergence of opinion exists regarding the true incidence of malignancy. We believe this is due to the limited number of cases reported and also because there is no uniform rule to catalogue certain sarcomas which frequently, without enough evidence, are classified as neurogenic.

The possibility of malignant changes in a benign tumor is important. If this possibility becomes a frequent reality, every diagnosis of mediastinal tumor should be followed by early surgical measures.

As the histological picture of these tumors is well known, we are merely presenting the histology in micro and macro photographs, with the correct histological diagnosis in each case.

Case 1: T. de C. Housewife, white, 32 years old, six months pregnant; came to the Maternity Hospital "Concepción Palacios" in December 1944. On routine fluoroscopic inspection of the chest a dense tumor-like shadow was found, posteriorly, in the left apex. Diagnosis of posterior mediastinal tumor, probably neurogenic, was made. The patient

*The Illustrations in this publication were made by Mildred Feo, M.T. in the "Instituto de Investigación Pediátrica."

Presented at the First International Congress on Diseases of the Chest, Rome, Italy, September 19, 1950.

†Attending Surgeon for the Caracas "Simón Bolívar" Tuberculosis Hospital. Attending Surgeon for the Thoracic Surgery Division of the "Hospital Oncológico" in Caracas.

††Surgical Consultant for Creole Petroleum Corporation. Attending Surgeon for the Division C of the Caracas "Hospital Oncológico." Assistant Attending for the Caracas "Hospital Vargas."

†††Chief of the "Servicio Nacional de Anatomía Patológica." Pathologist for the "José Manuel de Los Ríos" Hospital in Caracas.

was kept under observation and a slow growth of the tumor was evident. In November 1946, there was compression of the brachial plexus, and an exploratory thoracotomy was performed in December 1946. After resection of the posterior arch of the third and small portion of the fourth ribs a firm tumor was located in the apex of the left hemithorax, being implanted in the costo-vertebral angle. The parietal pleura was opened and an easy and complete enucleation of the tumor, together with part of the third and fourth intercostal nerves, was performed. The corresponding intercostal arteries were ligated and the thorax was closed.

The postoperative period was normal with healing by primary intention. A Horner syndrome was noticed which disappeared completely after six months. The patient left the hospital two weeks after the operation and has remained well for three and a half years.

Macroscopically the tumor appeared well encapsulated, spherical, smooth, glistening, mother-of-pearl white, with adherent nerve trunks. It measured about 8 cm. in diameter. The surface appeared firm, with pearl-white bands intercrossing in various directions.

Pathological Diagnosis: Neurofibroma.

Case 2: P.A.A., male, farmer, white, 80 years old. Examination was made in a Tuberculosis Prevention Clinic in May 1948, because of vague thoracic pain. A dense tumor-like shadow was found. He was referred to the "Instituto Oncológico Luis Razetti." At that time he was asymptomatic. The general and pleuropulmonary physical examinations were negative. Chest x-ray film showed a dense tumor-like, pyriform shadow, paravertebral, right side. Patches of atheroma on the aortic and pulmonary arteries.

An exploratory thoracotomy was performed through the posterior arches of the eighth and ninth right ribs. A small extrapleural tumor was easily enucleated, together with part of the eighth and ninth intercostal nerves, with ligation of intercostal arteries.

The postoperative period was normal and the patient has remained well 28 months after the operation.

Pathological Diagnosis: Neurofibroma.

Case 3: S.N., male, farmer, mixed race, 24 years old. In December 1948, during a routine examination for a health certificate, a dense, well delineated, tumor-like shadow was found in the right apex. The patient entered the "Instituto Oncológico Luis Razetti" for observation and treatment. General physical examination including chest revealed no abnormality. Laboratory examinations: blood, urine and feces, normal. The chest x-ray films showed a dense shadow, well delineated, spherical, located in the extreme right apex. The lateral x-ray inspection showed the posterior location of the tumor. The diagnosis of tumor, possibly of neurogenic origin was made and the mass located in the posterior-superior portion of the mediastinum. Thoracotomy was performed on January 25, 1949, by resection of the posterior arch of the fourth rib and a small fragment of the fifth. The parietal pleura was opened and a firm tumor, adherent to and possibly originating in the fourth intercostal nerve was encountered and enucleated. The intercostal artery was ligated and the thorax closed. The patient left the hospital two weeks after the operation and has remained well and without evidence of recurrence after 20 months.

Macroscopic Aspect: Pear-shaped tumor, 6 cm. long. The external surface appeared dark red in certain areas and pearl-white in others, smooth and glistening in nearly all the circumference, with adhesions in the remaining places.

Pathological Diagnosis: Neurofibroma.

Case 4: T.R., school boy, white, age 9 years. This patient was examined in October 1948, because of influenza and asthma. Chest x-ray film showed a dense tumor-like shadow in the right apex. On the lateral x-ray films the shadow appeared anterior to the trachea. General physical examination including the chest revealed no abnormality. With the diagnosis of possible bronchogenic or tracheal cyst, an exploratory thora-

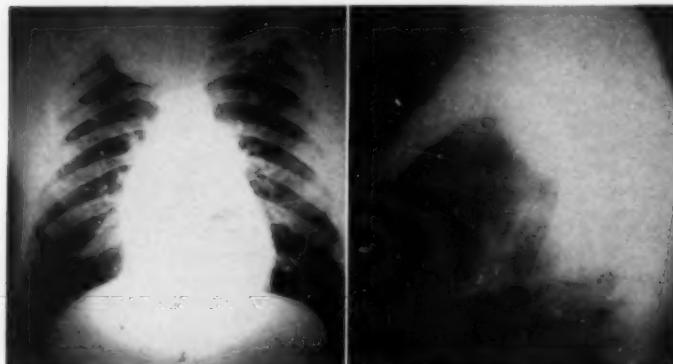


FIGURE 1

FIGURE 2

Figure 1, Case 3: X-ray film showing dense shadow, well encapsulated, located in the apex of the right hemithorax.—Figure 2, Case 3: Lateral x-ray film showing posterior location of the tumor.

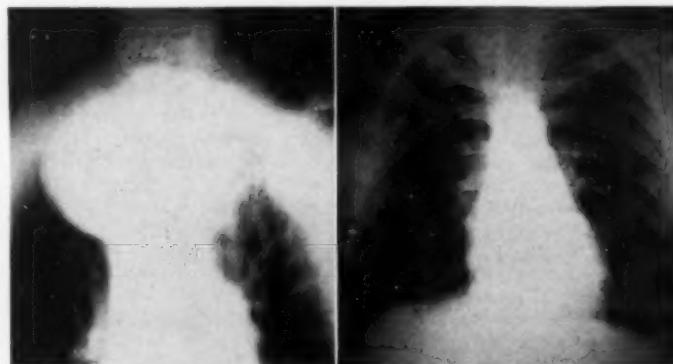


FIGURE 3

FIGURE 4

*Figure 3, Case 3: Tomography showing the location of the tumoral mass.
Figure 4, Case 3: X-ray film taken one week after the operation.*

cotomy by resection of almost the entire fourth rib was performed. An extrapleural, hard, pear-shaped tumor was found and enucleated. A nerve pedicle was cut and ligated. The tumor originated in the posterior and superior mediastinum, extending through the anterior portion.

The postoperative period was normal, with the exception of a Horner syndrome. The patient has remained well since the operation 22 months ago.

Macroscopic Aspect: Capsulated mass, $6\frac{1}{2}$ cm. long, smooth surface with nerve fragment of $3\frac{1}{2}$ cm. long and 3 mm. wide. On section the mass appeared limited by a very thin capsule. The surface was smooth, glistening, firm and with mother-of-pearl white striations.

Pathological Diagnosis: Ganglioneuroma.



FIGURE 5, Case 3: Photograph of the neurofibroma.

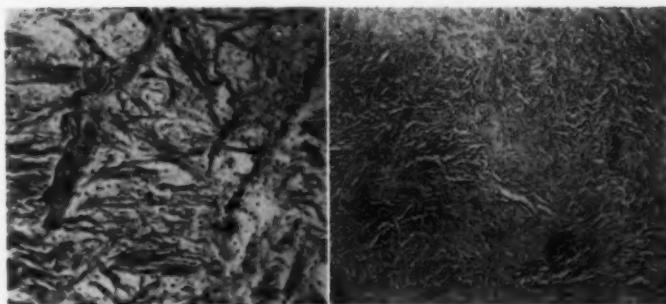


FIGURE 7

FIGURE 6

Figure 6, Case 3: Selected microphotography showing the topographic aspect of the tumor. Enlarged 100 X.—Figure 7, Case 3: Portion of previous illustration showing a general aspect and interstitial edema of the tumor. Enlarged 450 X.

Case 5: E.I., female, teacher, white, 22 years old. In 1949, prior to tonsillectomy, a radiological examination of the chest revealed a dense paravertebral tumor. No previous radioscopy existed and at that time the patient was completely asymptomatic. The general clinical examination was negative as well as that of the thorax. Laboratory examinations revealed no abnormality. Chest x-ray films showed a dense posterior paramediastinal tumor-like shadow. With the diagnosis of posterior-inferior mediastinal tumor, possibly of neurogenic origin, an exploratory thoracotomy was performed in June 1949. The posterior arch of the seventh rib and a small fragment of the eighth rib were resected. The pleural cavity was opened and a tumor mass of whitish color, firm consistency, para-vertebral and extra-pleural, was encountered. The parietal pleura was easily separated from the tumor mass and a small vascular pedicle was found and sectioned.

The postoperative period was normal and 15 months after the operation the patient has remained well.

Macroscopic Aspect: Bilocular mass, 14 cm. long. The exterior surface presented numerous adhesions and lobulations, mother-of-pearl white, elastic consistency. On section the surface was smooth, with cyst-like cavities in certain areas which measured from 1 to 2 cm.

Pathological Diagnosis: Ganglioneuroma.

Case 6: M.S.H., maid, white, 28 years old. On the routine fluoroscopy of the chest for a health certificate, a dense tumor-like paravertebral shadow was located in the posterior-superior mediastinum. The patient was referred to the "Instituto Oncológico Luis Razetti." She was in good general condition and asymptomatic. The general physical examination, was normal. With the diagnosis of mediastinal tumor, possibly neurogenic, a thoracotomy was performed by resecting the fifth rib. A tangerine-size mass, extrapleural, was enucleated and the nerve pedicle from the fifth intercostal nerve was ligated and cut.

The postoperative period was normal and four months after the operation the patient was well.

Macroscopic Aspect: Lobulated, capsulated mass, 6 cm. long, smooth, glistening, mother-of-pearl white. On section the surface was firm, smooth, homogeneous and limited laterally by a very thin capsule.

Pathological Diagnosis: Neurofibroma.

Comments

In our cases, as in the majority of cases recorded in literature, the tumors were located in the posterior mediastinum, with one exception in which the tumor extended into the anterior mediastinum.

In the series of Kent and Blades (*loc. cit.*), 71 cases were in the posterior mediastinum and three in the anterior. In D'Abreu's seven cases (*loc. cit.*), six were posterior and one anterior. Therefore, from our experiences and the statistics above cited, the tumors located in the posterior mediastinum should be considered as neurogenic.

Kent and Blades, in a series of 32 intrathoracic neurogenic benign tumors found 29 of them in the mediastinum. D'Abreu, in

a series of six tumors located in the posterior mediastinum, classified five as neurofibromas. In our series of six cases, four tumors were classified as neurofibromas.

The origin of the peripheral nerve tumors is a matter still controversial. Thus, while the majority of the authors agree that these tumors originate in the Schwann sheets, there are others like Rio Hortega,⁵ for instance, who believe that they are of neuroglial nature and that even though formed by elongated cells similar to those of Schwann, definitely are not formed by such cells and states "which, like every highly differentiated element, have a minimum capacity to divide." He believes that these tumors are formed by "embryonal elements originating in the same place as the Schwann cells lying in the thickness of the nerves."

None of our four cases of neurofibromas had any intraspinal extensions, nor erosion of ribs nor pleural effusion. They were located in the posterior mediastinum and in three of them there were connections with the intercostal nerves. Three were asymptomatic and one suffered vague thoracic pain. With the exception of this particular case, the others were all discovered during routine x-ray inspection of the chest. A dense shadow of precise outline was the constant radiological finding.

From a revision of the literature, Rogers and Keogh⁶ found that up to the present time 90 cases of intrathoracic ganglioneuroma have been diagnosed. From our two cases, located in the posterior mediastinum, one came to consultation because of asthma and the other was asymptomatic. Both cases had a thick nerve pedicle.

Ganglioneuromas are frequent in childhood. In Hollingsworth's⁷ cases, 48.8 per cent of these tumors were found in children under 10 years of age and 67 per cent were under 20. As in the case of the neurofibromas, these tumors are located in the posterior mediastinum and very seldom in the anterior mediastinum, as in D'Abreu's case.

Ganglioneuromas and sympathocytomas are synonymous terms for benign tumors of sympathetic origin, while sympatheticoblastomas and ganglioblastomas are restricted to malignant tumors. According to the degree of tumoral differentiation, Del Rio Hortega (*loc. cit.*),⁵ uses the terms of sympathogonioma, sympathoblastoma and sympathocytoma. He states "In the same manner that the sympathetic buds pass through phases of sympathogonia, still without nervous differentiation; sympathoblast, with incipient differentiation and sympathocyte, with complete ganglionar differentiation, there are also three well determined categories of blastomas, although with transitions from one to the other in mixed tumors." Even though this author considers these tumors analogous to the neuroblastomas, he believes that the latter orig-

inate in the nerve parenchyma and the sympathetic tumors in the ganglionic crest. Nevertheless, many authors refer to a tumor indistinctly as neuroblastoma or sympatheticoblastoma.

Willis⁸ believes that the neuroblastomas and ganglioneuromas are names applied only to members of the same growth type in which all the graduations, structure and behavior, can be observed. Bailey and Cushing, quoted by Hollingsworth (*loc. cit.*),⁷ prefer the name of sympatheticoblastomas instead of neuroblastomas for the tumors formed by undifferentiated cells of nervous origin.

Therefore, various terms which have nothing to do with the hypothetic origin of these tumors are used, and we conclude by saying that the terms of sympatheticoblastomas, sympatheticoblastomas and neuroblastomas are, in the majority of the cases, used indistinctly.

SUMMARY

A series of the first six neurogenic mediastinal tumors operated in Venezuela has been analyzed. Four of these tumors were diagnosed as neurofibromas and two as ganglioneuromas. Macroscopically the tumors appeared well encapsulated, with a thin capsule, which could be easily enucleated. They were all located in the posterior mediastinum and one of them partially extended to the anterior mediastinum, with no intraspinal invasion. Four cases were asymptomatic and diagnosis was made during fluoroscopy of the chest performed for various reasons; one was suffering from asthma and the other complained of vague thoracic pain.

In five of our cases the correct diagnosis was made before the operation. In the other the diagnosis of bronchogenic or tracheal cyst was made.

Evolution time was not determined. All the cases, with the exception of one, were operated immediately after the diagnosis was made. The remaining one was operated two years afterwards.

All of our cases have been under observation from 3½ years to 4½ months after operation and there have been no symptoms of recurrence.

RESUMEN

Los autores presentan 6 casos de tumores neurogénicos mediastinales, los primeros operados en Venezuela, de los cuales 4 fueron diagnosticados como neurofibromas y 2 como ganglioneuromas. Macroscópicamente se trataban de tumores bien circunscritos, con cápsula delgada, cuya extirpación se hizo sin mayores inconvenientes. Todos estaban en el mediastino posterior sin conexión con el canal raquídeo y uno ocupaba parte del mediastino anterior.

Eran cuatro asintomáticos y fueron diagnosticados haciendo exámenes rutinarios del tórax por motivos diferentes, uno presentó crisis asmatiformes y otro dolores vagos torácicos. En 5 casos se pensó en tumor neurogénico mediastinal y en 1 en quiste broncogénico o traqueal. En ninguno de nuestros casos podemos determinar la época de evolución del tumor. Con excepción de uno, operado dos años después de hacer el diagnóstico, todos los demás casos fueron seguidos de operación inmediata al diagnóstico. Los casos se han observado por espacio de 3½ años y 4½ meses el último operado, sin que se observen síntomas o recidivas.

RESUME

Les auteurs présentent six cas de tumeurs neurogeniques médiastinales, les premières opérées au Venezuela, parmi lesquelles quatre furent diagnostiquées comme neurofibromes et deux comme ganglioneuromas. Macroscopiquement il s'agissait de tumeurs bien circonscrites, à capsule mince, dont l'extirpation se fit sans plus d'inconvénient.

Toutes étaient situées dans le médiastine postérieur, sans relation avec le canal rachidien et seulement une avec une partie du médiastine antérieur. Il était question du 4 asintomatiques qui furent diagnostiquées après examens routiniers du torax pour motifs différents; une présente des crises asmatiformes et l'autre de vagues douleurs toraciques.

Dans 5 cas on supposa une tumeur neurogénique médiastinale et dans un cas un quiste broncogénique ou tracheal.

Dans aucun de nos cas nous ne pouvons déterminer l'époque de l'évolution de la tumeur. A l'exception d'un seul, opéré deux ans après le diagnostique, tous les autres furent suivis de l'opération immédiate au diagnostique. Les cas ont été observés durant 3 ans ½, le dernier opéré 4 mois ½, sans qu'il ait été observé de symptômes ou recidives.

REFERENCES

- 1 Thompson, John V.: "Mediastinal Tumors and Cysts," *Dis. of Chest*, 15:480, 1949.
- 2 Kent, Edward M., Blades, Brian, Valle, Anibal R. and Graham, Evarts A.: "Intrathoracic Neurogenic Tumors," *J. Thor. Surg.*, 13:116, 1944.
- 3 Thompson, John V.: "Mediastinal Tumors and Cysts," *Internat. Abst. of Surg.*, 84:195, 1947.
- 4 D'Abreu, A. L.: "Thoracic Neuro-fibroma," *Brit. J. of Tuberc. and Dis. of Chest*, 41:5, 1947.
- 5 Del Rio Hortega, P.: "Nomenclature and Classification of the Nervous System Tumors," Published in the *Archivos Argentinos de Neurologia*, Buenos Aires, 1941.
- 6 Rogers, J. G. and Keogh, J. P.: "Intrathoracic Ganglio-neuroma," *Dis. of Chest*, 17:532, 1950.
- 7 Hollingsworth, R. K.: "Intrathoracic Tumors of the Sympathetic Nervous System," *Surg., Gynec. and Obst.*, 82:682, 1946.
- 8 Willis, R. A.: "Pathology of Tumors," Butterworth and Co., Publishers, Ltd., Bell Yard, Temple Bar 1948.

Pulmonary Manifestations of Schistosomiasis*

ABDEL-AZIZ SAMI, M.D., F.C.C.P.†
Cairo, Egypt

Trematodes of the genus *Schistosoma*, which occur as parasites in some parts of the venous circulatory system in human beings, are very frequent in Egypt. Infection is almost the rule among Egyptian peasants, and it is estimated that 60 to 70 per cent of the inhabitants are infected. It used to be considered that the affection was limited to the lower urinary and intestinal tracts, with visceral complications limited to the abdominal organs, particularly the liver, spleen, and kidneys. It is only relatively recent that affection of the lungs has attracted attention.

Two species of the parasite occur in Egypt. *Sch. mansoni* inhabits the tributaries of the portal vein, while *Sch. haematobium* thrives in the vesical, prostatic and ureteric veins. They may, however, occasionally exchange localities, and double infection is frequent.

Infection occurs by contact with water which has been contaminated with ova passed by an infected person. The ova hatch out a "miracidium" which then infects a special kind of snail. In this it undergoes further development, and emerges as a "cercaria" which swims about in the water. If a human being comes in contact, the cercaria penetrates the skin, and is carried by the circulation through the lungs to its final habitat where it develops into the adult worm. This lays its eggs in the venules of the bladder or rectum, and during muscular contraction of these organs the ova are expelled into the lumen, from which they escape with the urine or feces.

The chief clinical manifestations are the passage of blood in the urine or stools. The most frequent complications are cirrhosis of the liver, urinary tract infection, pyonephrosis and urinary calculi.

Historical: Belleli¹ reported Bilharzia ova in the lungs in 1885. Symmers² described Schistosoma worms in the vessels of the lungs in 1905. In 1928 Sorour³ described the pathology of Bilharzial lesions in the lungs, and further pathological studies were made by Shaw and Abu Ghareeb in 1938.⁴

*More usually called "Bilharzia" after Bilharz who first described the parasite in 1851. In the present article the two terms will be used synonymously.

Presented at the First International Congress on Diseases of the Chest, Rome, Italy, September 21, 1950.

†From the Chest Section, Kash-el-Ainy Hospital, Cairo, Egypt.

Azmy and Effat⁵ reported two cases of pulmonary arteriosclerosis due to bilharzia in 1932. Mainzer^{6,7} reported on bilharzial asthma and on latent x-ray findings in 1939.

Other studies were published by Kenawy and Guirgis,⁸ by Bedford, Aldarous and Gurgis,⁹ by A. H. Moussa,¹⁰ M. Erfan,¹¹ and Erfan et al.¹²

Incidence: It is difficult to estimate the true incidence of pulmonary affection in endemic regions. The figures that are available are taken from the material of general hospitals, or from post-mortem material, both of which represent cases with the heavier grades of infection.

Bilharzial cor pulmonale, which is a manifestation of advanced pulmonary affection, was recorded in 0.8 per cent of 520 cases of visceral bilharziasis admitted to Kaer-el-Ainy hospital. It was found in 2.1 per cent of 282 consecutive autopsies of cases with schistosomiasis. Bilharzial lesions in the lungs were found in 33 per cent of post-mortems of cases with bilharzial infection (Shaw and Abou Ghareeb⁴).

Pathogenesis: The bilharzia parasite can affect the lungs in various ways and at various stages of infection. (1) During the passage of the invading cercaria through the pulmonary circulation, symptoms and signs of pulmonary irritation may occur which have long been known as "verminous pneumonia." (2) All along the duration of infestation, but particularly during the earliest stages, and especially so in members of European races, allergic reactions of the type of Loefler's syndrome may appear. (3) Asthma may also occur, as especially stressed by Mainzer.⁶ Our experience with Egyptian patients however, shows these allergic reactions to be distinctly rare, except possibly during the stage of actual invasion, when they usually escape detection.⁴ The most striking and most frequently observed manifestation, however, is due to embolisation into the pulmonary circulation of ova, and occasionally of the worms themselves. This embolisation becomes more frequent the more chronic the infection, and possibly occurs at one time or another in almost all bilharzial cases.

With Sch. haematobium, which inhabits systemic veins, the embolisation is direct. With Sch. mansoni, which lives in the portal system, pulmonary embolisation can only occur when hepatic cirrhosis, which is a frequent complication, has led to the development of anastomosis between the portal and systemic veins.

Mainzer⁷ believes that there is a type of bilharzial infection which is purely visceral, all or most of the ova being embolised to the liver or lungs instead of following their normal course through the bladder or rectum.

Pathology: Only the embolic lesions have rendered themselves

to pathological study. Allergic lesions have not been observed post-mortem, except as an accompaniment to the former.

Sorour³ described bilharzial tubercles, and in addition bronchial lesions leading to a condition of "endobronchitis obliterans." The thorough studies of Shaw and Abou Ghareeb,⁴ however, showed the main effect to be vascular and perivascular. The other pulmonary structures are free of lesions except in the case of embolisation by worms, when lesions of a pneumonitis type may occur. The rare occurrence of ova in the sputum, however (Erfan¹¹), shows that direct involvement of the bronchial tree may occur.

Shaw and Abou Ghareeb describe the essential lesion as a bilharzial tubercle occurring round the dead ovum (Figure 1). In slight cases only isolated parenchymatous tubercles are present. With massive infection, healing of these multiple lesions causes an obliterative arteritis (Figure 2), often followed by canalisation of the occluding tissue. The newly formed capillaries hypertrophy, producing a structure they call "angiomatoid," which they consider characteristic of the bilharzial lesion (Figure 3). With massive and repeated infection the arterial changes are widespread, with dilatation of the main pulmonary arteries, and right ventricular hypertrophy. The dilatation of the pulmonary artery and its main branches may reach aneurysmal proportions, as in the case described by Bedford et al.⁹

Embolised worms cause no lesions unless they die, when there occurs an acute focal necrotising pneumonia. This is later cicatrised, and the worm may become calcified (Figure 4).

Clinical Picture: These may be described under: (1) Allergic manifestations, (2) Non-allergic parenchymatous manifestations, and (3) vascular manifestations.

(1) Allergic manifestations: These have been particularly described by Mainzer.⁶ He reported four cases of asthma which responded to treatment with antimony, which is the specific

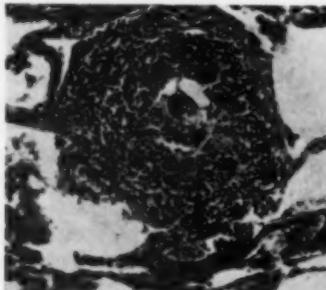


FIGURE 1



FIGURE 2

treatment for bilharzias, and in one of which bilharzia ova were found in the sputum. We note however, that in some of the cases the asthma recurred after antimony treatment, and repeated courses had to be given. My own experience of asthma in bilharzial subjects suggests that the two are associated rather than casually related, though the latter possibility cannot be excluded in some of the cases.

Lesions of the Loeffler type have been observed in bilharzial infection. They are especially likely to occur at the time of invasion, while later they have been observed during antimony treatment, presumably from the liberation of toxins from the dead worms. As these allergic lesions are asymptomatic, they are rarely seen in hospital practice.

(2) Non-allergic parenchymatous manifestations: These are hitherto ill-defined. Chronic bronchitis, emphysema, bronchiectasis and pulmonary fibrosis have been reported. Erfan et al.¹² describe among the symptoms noted in their series, cough, thoracic pain, and slight haemoptysis; rales were sometimes present over the bases of the lungs. They noted that four cases of chronic bron-

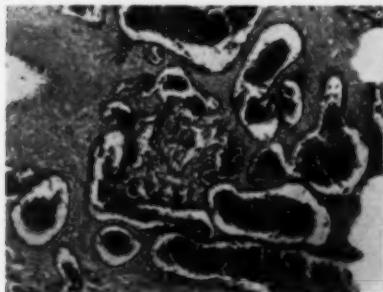


FIGURE 3

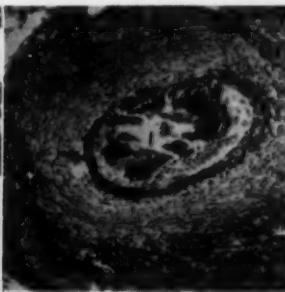


FIGURE 4



FIGURE 5

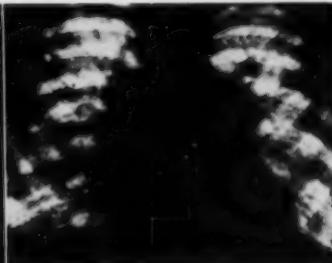


FIGURE 6

chitis improved on antimony treatment. In addition Erfan¹¹ reported a case of bronchitis and emphysema in which bilharzia ova were found in the sputum.

While there is no proof that bilharzial lesions are directly responsible for these conditions, it may be assumed that they at least play a predisposing role.

(3) Vascular manifestations: These are the most important, and the best studied, of the manifestations of pulmonary bilharziasis. They constitute the clear-cut picture of pulmonary vascular hypertension resulting eventually in *cor pulmonale*.

We owe the first description to Azmy and Effat,⁵ who described two cases in 1932, one of which was confirmed post-mortem. Later reports followed by Kenawy and Grgis,⁸ Moussa,¹⁰ Bedford et al.,⁹ Erfan,¹¹ Erfan et al.,¹² etc.

Bilharzial hepatosplenomegaly is usually present. The main complaint is of general weakness, and some dyspnoea on effort may be present. There may be some pallor from associated anemia, but cyanosis is conspicuous by its absence. This striking difference from Ayerza's disease, which is similar in many other respects, has been explained by the localisation of the lesion in the pulmonary arterioles, leaving the pulmonary capillaries and alveoli free. There is thus no cause for the development of cyanosis as long as the right ventricle is able to overcome the obstruction.

Physical examination reveals nothing characteristic in slight cases, but with sufficiently developed cases there is an accentuation of the second pulmonary cardiac sound, often with a palpable shock. When the condition is further developed, there is dullness over the dilated pulmonary trunk, in the third left interspace. The pulsation of the artery may be felt, and a soft diastolic murmur of pulmonary regurgitation often develops. The cardiac dullness is extended to the right owing to enlargement of the right

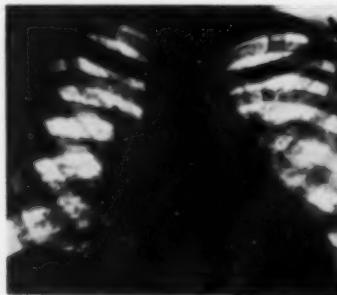


FIGURE 7

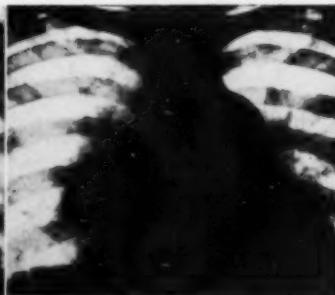


FIGURE 8

ventricle. In the final stages, the picture of systemic venous congestion may be found.

The disease occurs chiefly in young adults, especially between 20 and 35. It has however, been observed as early as the age of 12.

Radiological Appearances: Mainzer⁷ described opacities either accompanying asthma, or occurring without symptoms in bilharziasis. These may be miliary, may consist of coarser foci, or may form a honey-comb or "birch-broom" appearance.

In the more recent studies of Erfan et al.,¹² three grades are described: (1) an intensification of the shadows of one or more of the second or third degree arteries, mostly the basal. The arteries appear beaded with nodules 0.5 to 1.0 mm. in diameter, which have a more or less hazy outline (Figure 5). (2) Here the lesions are more widely distributed. Clusters of mottling in relation to the arteries give the lung fields a granular background. The cardiac outline shows beginning changes in the form of a slight prominence of the pulmonary conus, with slight enlargement of the transverse diameter (Figure 6).

If the disease is arrested at this stage, we get fewer nodules with only moderately granular fields, while the cardiac changes are the same (Figure 7).

(3) In the third grade the lesions are more severe and patches of localized opacity may be present. The pulmonary conus and trunk are ballooned and may reach aneurysmal size. The heart shows the typical configuration of cor pulmonale with enlargement of the right ventricle and right auricle (Figure 8).

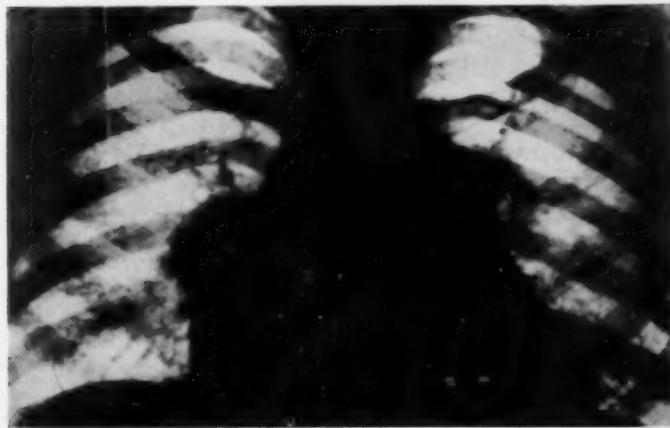


FIGURE 5

If healing occurs at this stage, the lung fields become more or less clear, but the arterial and cardiac changes persist or increase (Figure 9).

Laboratory Findings: Bilharzia ova are present in the urine or stools unless the bilharzial infection has died out or in the rare visceral form described by Mainzer.⁷ The sputum may contain eosinophils, or rarely actual ova. Eosinophilia in the blood is present with active infection and may reach as high as 70 per cent. The cutaneous reaction of Fairley has not been used routinely in the Egyptian material, but in the cases described by Mainzer it was regularly positive.

Diagnosis: This rests on the presence of the above-mentioned clinical and radiological pictures, together with evidence of bilharzial infection. In endemic areas the presence of a cirrhoued liver may be taken as almost sure evidence of bilharziasis, even in the absence of ova from the urine and stools.

The pulmonary shadows may simulate tuberculosis, silicosis, sarcoidosis, atypical pneumonia or parakeratitis nodosa.

In advanced cases with marked affection of the heart and pulmonary artery, the condition has to be distinguished mainly from congenital atrial septal defect. The differentiation rests mainly on the presence of evidence of present or past bilharzial infection, and the almost constant association with cirrhosis of the liver.

Course and Prognosis: Pulmonary bilharziasis may be arrested at any stage, and the patient may live his normal span of life. More often he succumbs to the associated hepatic cirrhosis. In advanced cases, failure of the right side of the heart may terminate the picture. This failure, as pointed out by Erfan,¹¹ is late in appearance, and its cause is mechanical, as there is no direct myocardial damage. Sudden death from pulmonary infarction is not uncommon.

Treatment: In cases which still present evidence of active bilharzial infection, antimony (tartar emetic, Fouadin) should be given. The course may have to be repeated. In advanced cases with enlargement of the right ventricle, however, it must be given with caution. Focal reactions in the lung are very frequent during antimony treatment and may be observed radiologically as a transient increase in the already existing shadows. Heart failure should be treated along ordinary lines.

SUMMARY

An account of pulmonary schistosomiasis has been given. The lungs are frequently affected in endemic areas. Asthma, pneumonic episodes or lesions of the Loeffler type may occur. But the most frequent condition is a progressive obstruction of the pulmonary

arterioles due to embolisation by ova, eventually leading to pulmonary hypertension, dilatation of the main pulmonary arteries and enlargement of the right side of the heart.

The condition should be constantly borne in mind in regions in which bilharzia is endemic.

RESUMEN

Se describe la esquistosomiasis pulmonar. Los pulmones son frecuentemente afectados en las áreas endémicas. Asma o episodios neumónicos del tipo de los infiltrados de Loeffler pueden ocurrir. Pero lo más frecuente es la obstrucción progresiva de las arteriolas pulmonares debida a la amebolización por huevos, lo que puede llevar a la hipertensión pulmonar, dilatación de las arterias principales pulmonares y crecimiento del corazón del lado derecho.

Estas condiciones deben tenerse presentes en las regiones donde la bilarzia es endémica.

RESUME

Dans les pays où la schistosomiase est endémique, les poumons sont souvent atteints. Ainsi peuvent apparaître des crises asthmatiformes, des épisodes pneumoniques, ou des lésions du type de la maladie de Loeffler. Mais ce qu'on constate le plus fréquemment, c'est l'obstruction progressive de l'artère pulmonaire, qui peut mener à une hypertension de la circulation pulmonaire, à une dilatation des artères pulmonaires, et à une augmentation des cavités droites du cœur.

Il faut toujours avoir présente à l'esprit la possibilité d'une telle affection dans les régions où sévit la bilharziose.

REFERENCES

- 1 Belleli, V.: "Les Oeufs de Bilharzia haematobia dans les poumons," *Unione med. egiz.*, Alessandria, 1 no. 22-23, 1884-1885.
- 2 Symmers, W. St. C.: "A Note on a Case of Bilharzial Worms in the Pulmonary Blood in a Case of Bilharzial Colitis," *Lancet*, 1:22, 1905.
- 3 Sorour, M. F.: "The Pathology and Morbid Histology of Bilharzial Lesions in Various Parts of the Body," *C. R. Congrès Internat. Médecine Tropicale et d'hygiène Cairo*, 4:321, 1928.
- 4 Shaw, A. F. B. and Ghareeb, A. A.: "The Pathogenesis of Pulmonary Schistosomiasis," *J. Path. and Bact.*, 46:401, 1938.
- 5 Azmy, S. and Effat, S.: "Pulmonary Arteriosclerosis of a Bilharzial Nature," *J. Egypt. Med. Assoc.*, 15:87, 1932.
- 6 Mainzer, F.: "Bilharzial Asthma," *J. Allergy*, 10:349, 1939.
- 7 Mainzer, F.: "On a Latent Pulmonary Disease Revealed by X-Rays in Intestinal Bilharziasis," *Puerto Rico J. Pub. Health and Tropical Med.*, III, 1939.
- 8 Kenawy, M. R. and Guirguis, S.: *Gaz. Fac. Med.*, 8:156, 1940, Cairo.
- 9 Bedford, E., Alderous, S. M. and Girgis, N. B.: "Bilharzial Heart Disease in Egypt," *Brit. Heart Jour.*, 8:87, 1946.
- 10 Moussa, S. H.: "A Case of Bilharzial Ayerza's Disease," *Gaz. Fac. Med.*, 10:37, 1942.
- 11 Erfan, M.: "Pulmonary Schistosomiasis," *Trans. Roy. Soc. Trop. Med. and Hyg.*, 42:109, 1948.
- 12 Erfan, M., Erfan, H., Moussa, A. H. and Deeb, A. A.: "Chronic Pulmonary Schistosomiasis, A Clinical and Radiological Study," *Ibid.*, 42:477, 1949.

World Incidence of Mortality From Chest Disease*

GIOVANNI L'ELTORE, M.D., F.C.C.P.[†]
Rome, Italy

Chest diseases are many, with different characteristics and varied etiologies. Taken as a whole, and singling out the major ones, they form a group of paramount importance from the standpoint of the problems involved, their contribution to the death rate from all causes being substantial—around 30 per cent.

In the following remarks, I propose to trace a general picture of the incidence and evolution of this major group of morbidity causes, basing it exclusively on death rate data.

It may be easily objected that the death rate ill affords a complete picture of the phenomenon, especially when there is an heterogeneous aggregate of morbidity causes involved; for some of these causes, such as heart diseases, fatality is exceedingly high, while for others, such as pulmonary tuberculosis, it is between 20 and 50 per cent, and for still others, such as certain forms of bronchitis, it is practically negligible.

There are included also, diseases which can have either a swift outcome, as is the case with bronchopneumonia, or confine the patient for years and years in a sanatorium, like tuberculosis, or yet lead to death after years of silent evolution, with slight disorders and recurrent attacks, as we have with certain heart diseases.

On the other hand, it may be stressed that the death rate is undoubtedly one of the major aspects with the most evident consequences for the family and society, and that quite satisfactory mortality data are obtainable for the great majority of the countries of the world. I say "quite satisfactory," since, even in the course of the present survey, doubts have arisen as to the reliability of certain figures.

In the last hundred years, in the great majority of civilized countries, the general death rate has shown a marked downward trend. In the last 50 years, such a trend has been particularly appreciable and has involved larger and larger areas, because of the spreading of a more hygienic way of life, and the development of medical knowledge and of rational principles of Public Health organization.

*Presented at the First International Congress on Diseases of the Chest, Rome, Italy, September 20, 1950.

[†]General Secretary of the Italian Federation Against Tuberculosis; Vice-Director of the "Carlo Forlanini" Institute, Rome, Italy.

The decrease in the death rate from all causes since the beginning of the century is estimated to be around 30 to 35 per cent in Europe, and even above 40 per cent in certain Western areas. Also in some extra-European countries for which reliable statistics have been available for some years, there is evidence of marked progress. Nevertheless, a comprehensive evaluation, also on a continental basis, is very difficult since no data are available for some countries. While in North America, in certain areas of Africa and Oceania, the phenomenon's level and evolution, at least insofar as the white population is concerned, are quite similar to those prevailing in the European countries, much remains to be done in South America and in the greatest part of Asia and Africa, and operational conditions are often vaguely known.

In the first place, one must stress that the general decline in death rates has not equally concerned *all ages*. A study of data concerning Western Europe shows that, always in the last half century, the younger age group, in particular, has benefited in the death rate decline. For the first twelve months of life, present annual rates are about 25 to 40 per cent of the early century rates; from the first to the fourth year, they are 10 to 30 per cent; from the fifth to the fifteenth, 15 to 35 per cent.

In the older age groups, instead, the death rate decline is less apparent: in the 75-year-old (and older) group, the decrease is about 10 to 20 per cent. Conditions are somewhat better in the younger age groups, until 45 years of age. Between 15 and 45 the decline is very irregular, the present rates being from 30 to 80 per cent of the initial ones, and from 45 to 60 per cent in the great majority of cases.

From these data, it is easy to realize what an influence the decline of the death rate from chest disease has had on general mortality, even if in concurrence with diseases from other causes.

The maintenance of a high death rate in old age groups is closely linked to the strong and growing incidence of heart disease, to which tumors, having a number of very important localizations in the chest must be added. The substantial decrease in the death rate during the first year of life is due to progress in the control of gastro-enteritis, the lower incidence of tuberculosis and the lower hazard of nontuberculous diseases of the respiratory system. The latter, particularly linked to infantile exanthematous disease, also have a lowering influence on other age groups. Finally, the irregularity of the variations noted in the 15 to 45-year-old groups can be chiefly attributed to the differences present in the age curves of tuberculosis mortality, such curves presenting substantial variations in the epidemiologic cycle of the disease.

From these remarks having long-range medical, economic and

social importance, we will now pass to more detailed examination of cases gathered from 21 European countries and 17 extra-European countries, *with a global population comprising about 30 per cent of the total world population.*

For this purpose, we have considered both the general death rate and the death rate for chest disease, subdividing the latter into five great categories:

- 1) Heart disease,
- 2) Tuberculosis of the respiratory system,
- 3) Bronchitis,
- 4) Pneumonia,
- 5) Other diseases of the respiratory system: this category includes tumors, really deserving special consideration which the official data of many countries have not offered.

Insofar as the *intensity of mortality* is concerned, a number of points can be immediately made. At the beginning of the century, both in European and extra-European countries, the most important cause of death among chest diseases was pneumonia, with a death rate of 1.69 per thousand; in extra-European countries, the second important cause was tuberculosis (1.35 per thousand) and third, heart disease (1.02 per thousand), both groups afforded the same rate in Europe (1.46 per thousand); bronchitis and other chest diseases followed with far lower rates. It is interesting to observe that mortality from tuberculosis appears higher in Europe, since many extra-European countries are still in a backward phase of tubercularization and, on the other hand, figures are not always representative for countries in which the collection of data is not up-to-date. In a closer observation period, the order appears greatly altered: for both groups of countries, now, heart disease ranks first (2.18 per thousand in Europe, and 1.92 per thousand in extra-European countries), followed by: pneumonia (Europe, 1.01 per thousand; other countries, 1.08 per thousand); tuberculosis of the respiratory system (Europe, 0.78 per thousand; other countries, 0.84 per thousand); other diseases of the respiratory system (Europe, 0.32 per thousand; other countries, 0.20 per thousand); and bronchitis (Europe, 0.25 per thousand; other countries, 0.17 per thousand).

What, in brief, has happened in the last fifty years?

Mortality from heart disease has substantially increased, and mortality from other groups of diseases has declined, but not at the same rate for each disease or each group of countries.

The most important fact is that the respective position of the two groups, as far as tuberculosis of the respiratory system is concerned, is inverted, a phenomenon on which we shall dwell later on. Considering as a whole all chest diseases, it is apparent

that rates in Europe have declined from 5.79 to 4.53 per thousand, and in extra-European countries from 5.07 to 4.21 per thousand; in the same period the general death rate has declined from 18.04 to 13.24 per thousand, and from 20.40 to 13.31 per thousand respectively, that is, in both cases the per cent of decrease is greater than for chest diseases. This is chiefly due to a decrease in contagious diseases (tuberculosis excepted): in effect, the decline in mortality from all causes is higher in extra-European countries than in Europe, where infectious diseases were already controlled at the beginning of the century.

At this point it is appropriate to consider the intensity variations registered in the death rate for each group.

Let us first consider the trends of *tuberculosis of the respiratory system* in Europe, comparing data of the two periods: it appears to have decreased, on the average, of 47 per cent, with an 84 per cent peak in Denmark, and with the exception of Portugal, probably because of imperfect surveys in the initial periods. As I said before, once the first phase of tuberculization is over, improvements in the field of tuberculosis control are more marked in industrial countries where the death rate had reached the highest peaks in the last century.

As far as *bronchitis* is concerned, it appears that all countries (with the exception of Italy and Sweden, where only a slight decline was recorded, averaging respectively 13 and 23 per cent), have registered a substantial decrease—70 per cent on the average. The two exceptions cannot be charged to climatic influences, since in Norway, having the same climate as Sweden, there has been a 92 per cent decrease, and in Spain, with life conditions similar to those of Italy, an 85 per cent decline was recorded. Thus the reason for such discrepancies must be found in different appraisal or diagnostic errors on the part of physicians, and perhaps also in differing classification criteria. Insofar as *pneumonia* is concerned, it can be observed that the decrease has been less than for bronchitis, averaging 40 per cent with a 76 per cent peak in Belgium. For a number of countries (Norway, Portugal, Rumania, Hungary), instead of declining, the death rate has increased. Since the same countries still show a substantial decline in the bronchitis rate, it is possible that diagnostic criteria, and especially classification criteria, have not remained unchanged in the course of time.

Pneumonia's deadliness has been enormously controlled since the development of sulpha drugs and penicillin as effective therapeutic means, and thus there are grounds to believe that further substantial progress is to be expected soon, so that this disease will cease to be one of the major causes of death. On the other

TABLE I: FIRST PERIOD
DEATH RATES FROM CHEST DISEASES
(Per 1,000 Population)

European Countries	Years	All Chest Diseases	Diseases of the Heart	Tuberculosis of the Respiratory System	Pneumonia	Bronchitis	Other Diseases of the Respiratory System		All Causes
							— ⁷	— ⁷	
Austria	1921-23	5.53	2.15 ¹⁴	2.15	1.24	—	—	—	16.24
Belgium	1900-02	6.13	1.78	1.34	3.01 ¹⁰	—	— ⁷	—	17.86
Czechoslovakia	1937	4.87	2.09	1.08	1.20	0.18	0.32	13.10	—
Denmark	1900-02	4.71	0.93	1.52	1.64	0.37	0.25	15.86	—
Eire	1900-02	5.60	0.38	2.17	0.82	1.95	0.37	18.30	—
Finland	1911-13	2.59 ¹⁶	—	2.59	—	—	—	—	16.18
France	1900-02	8.17	1.43	3.08	1.34	0.95	1.38	20.57	—
Germany	1911-13	5.10	1.63 ¹⁵	1.33	2.14 ¹¹	— ⁸	— ¹³	16.03	—
England and Wales	1900-02	5.87	1.51	1.28	1.31	1.46	0.30	17.16	—
North Ireland ³	1922-24	5.62	2.03	1.22	1.04	1.11	0.21	15.29	—
Iceland	1911-15	4.05	0.60	1.10	1.73	0.46	0.12	13.99	—
Italy	1900-02	7.54	1.82	1.11	2.30	1.97	0.33	22.61	—
Norway	1900-02	4.23	0.56	1.98	0.65	1.00	0.04	14.83	—
Holland	1901-03	3.48	0.54	1.34	0.89	0.71	—	16.33	—
Portugal ¹⁴	1902-04	3.43	0.82	0.95	0.76	0.62	0.27	17.90	—
Rumania ⁵	1901-03	8.83	1.24	2.92	1.86	0.50	2.31	25.54	—
Scotland	1900-02	6.24	1.49	1.54	1.42	1.40	0.39	17.91	—
Spain	1900-02	7.89	1.46	1.41	1.43	2.33	1.25	27.41	—
Sweden ⁶	1901-03	5.08	0.62	2.22	1.35	0.71	0.17	14.56	—
Switzerland	1911-13	4.98	1.50	1.58	1.63 ¹²	— ⁹	0.27	15.02	—
Hungary	1900-02	4.63	0.46	1.87	1.42	0.43	0.45	14.36	—
Total in 21 European Countries		5.79	1.46	1.46	1.69	0.85	0.33	18.04	—

TABLE I: FIRST PERIOD (Continued) DEATH RATIOS FROM CHEST DISEASES

European Countries		(Proportionate Mortality per 1,000 Deaths from All Causes)					
Austria	1921-23	34.05	13.24 ⁴	13.24	7.63	— ⁷	—
Belgium	1900-02	34.32	9.97	7.50	16.85 ¹⁰	— ⁷	—
Czechoslovakia	1937	37.18	15.95	8.24	9.16	1.37	2.44
Denmark	1900-02	29.70	5.88	9.58	10.34	2.33	1.58
Eire	1900-02	31.09	2.08	11.86	4.48	10.65	2.02
Finland	1911-13	16.01 ¹⁶	—	16.01	—	—	—
France ²	1900-02	39.72	6.96	14.97	6.51	4.62	6.71
Germany	1911-13	31.81	10.17 ¹	8.30	13.35 ¹¹	— ⁸	— ¹³
England and Wales	1900-02	34.21	8.80	7.46	7.63	8.51	1.75
North Ireland ³	1922-24	36.76	13.28	7.98	6.80	7.26	1.37
Iceland	1911-15	28.95	4.29	7.86	12.36	3.29	0.86
Italy	1900-02	33.35	8.06	4.91	10.17	8.71	1.46
Norway	1900-02	28.52	3.71	13.35	4.38	6.74	0.27
Holland	1901-03	21.31	3.31	8.21	5.45	4.35	—
Portugal ⁴	1902-04	19.16	4.58	5.31	4.25	3.46	1.51
Romania ⁵	1901-03	34.57	4.85	11.43	7.28	1.96	9.04
Scotland	1900-02	34.84	8.32	8.60	7.93	7.82	2.18
Spain	1900-02	28.78	5.33	5.14	5.22	8.50	4.56
Sweden ⁶	1901-03	34.89	4.26	15.25	9.27	4.86	1.17
Switzerland	1911-13	33.16	9.99	10.52	10.85 ¹²	— ⁹	1.80
Hungary	1900-02	32.24	3.20	13.02	9.89	2.99	3.13
Total in 21 European Countries		32.09	8.09	8.09	9.37	4.71	1.83

NOTE: 1. Any other type of tuberculosis included.—2. For the period 1900-1902, data are dealing with towns over 30,000 inhabitants.—3. For the year 1948, data are temporary.—4. Data are dealing with the continent only.—5. Data are dealing with main towns.—6. Towns only.—7. Included in pneumonias.—8. Included in pneumonias.—9. Included in pneumonias.—10. Included in the other diseases of respiratory system.—11. Included in pneumonias.—12. Bronchitis included.—13. Included in pneumonias.—14. Bronchitis included.—15. Other diseases of circulatory system included.—16. Tuberculosis of respiratory system only.

TABLE I: FIRST PERIOD (Continued)
DEATH RATES FROM CHEST DISEASES
(Per 1,000 Population)

Extra-European Countries	Years	All Chest Diseases	Diseases of the Heart	Tuberculosis of the Respiratory System	Pneumonia	Bronchitis	Other Diseases of the Respiratory System	All Causes
Brazil	1908-10	6.88	1.96 ^c	3.11 ^c	1.82 ^c	— ³	22.46	
Canada	1929-31	2.50	1.20	0.58	0.68	0.04	—	9.81
Ceylon	1930-32	3.04	0.17	0.59	1.37	0.26	0.64	22.65
Chile	1911-13	8.44	1.12	2.50	3.71	0.13	0.98	30.87
China (Shanghai)	1933-35	2.07	0.12	0.44	0.34	0.45	0.11	12.96
Colombia	1915-17	1.96	0.12	0.29	0.76	0.51	0.28	15.66
Australian Confed.	1905-07	2.32	0.64	0.80	0.53	0.35	—	11.00
Japan	1900-02	4.66	0.49	1.37	1.08	1.16	0.55	20.50
Hawaii	1918-20	4.08	0.69	1.59	0.95	0.31	1.14	15.09
Hong Kong	1909-11	5.01	0.45	1.78	2.78	—	—	17.31
Mexico	1934-35	4.97	0.45	0.40	3.30	0.61	0.21	23.38
New Zealand	1903-05	2.69	0.80	0.66	1.51	0.40	0.22	9.73
Panama	1908-10	3.33	0.19	1.39	1.17	0.27	0.30	13.85
U.S.A.	1907-08	5.17	1.61	1.57	1.49	0.29	0.20	16.02
Turkey ^a	1931-33	4.82	1.47	1.10	1.95	0.09	0.22	12.10
South Africa	1913-15	1.99	0.59	0.40	0.61	0.24	0.15	10.02
Uruguay	1901-03	3.21	0.69	0.95	1.05	0.20	0.31	13.34
Total in 17 Extra-European Countries		5.07	1.02	1.35	1.69	0.65	0.36	20.40
Total in 38 European and Extra-European Countries		5.54	1.31	1.42	1.69	0.78	0.34	18.88

TABLE I: FIRST PERIOD (Continued)
DEATH RATIOS FROM CHEST DISEASES
(Proportionate Mortality per 1,000 Deaths from All Causes)

Extra-European Countries	Years	All Chest Diseases	Diseases of the Heart	Tuberculosis	Other Diseases of the Respiratory System			All Causes
					Pneumonia	Bronchitis	— ³	
Brazil	1908-10	30.71	8.70 ⁶	13.88 ¹	8.12 ⁴	— ³	— ⁵	100
Canada	1929-31	25.48	12.23	5.91	6.93	0.41	—	100
Ceylon	1930-32	13.42	0.75	2.60	6.07	1.15	2.83	100
Chile	1911-13	27.34	3.63	8.10	12.02	0.42	3.17	100
China (Shanghai)	1933-35	15.97	0.92	3.39	2.02	3.47	0.85	100
Colombia	1915-17	12.52	0.77	1.85	4.85	3.26	1.79	100
Australian Confed.	1905-07	21.00	5.82	7.27	4.82	3.18	—	100
Japan	1900-02	22.73	2.39	5.71	5.27	5.66	2.68	100
Hawaii	1918-20	31.01	4.57	10.54	6.29	2.05	7.55	100
Hong Kong	1909-11	28.94	2.60	10.28	16.06	—	—	100
Mexico	1934-35	21.26	1.92	1.71	14.11	2.61	0.90	100
New Zealand	1903-05	27.65	9.15	6.78	5.24	4.11	2.26	100
Panama	1908-10	24.04	1.37	10.04	8.45	1.95	2.17	100
U. S. A.	1907-08	32.27	10.05	9.80	9.30	1.81	1.25	100
Turkey ²	1931-33	39.83	12.15	9.09	16.12	0.74	1.82	100
South Africa	1913-15	19.86	5.89	3.99	6.09	2.39	1.50	100
Uruguay	1901-03	24.06	5.17	7.12	7.87	1.50	2.32	100
Total in 17 Extra-European Countries		24.85	5.00	6.61	8.28	3.20	1.76	100
Total in 38 European and Extra-European Countries		29.34	6.94	7.52	8.95	4.13	1.80	100

NOTE: 1 Every other tuberculosis type included.—2 Data of the first period are dealing with 37 villages; those of the second period are dealing with 23 villages.—3 Included in pneumonia.—4 Bronchitis and other diseases of respiratory system included.—5 Included in pneumonia.—6 Other diseases of circulatory system included.

hand, since the effectiveness of therapy is linked to early diagnosis and medical intervention, in the agricultural and sparsely inhabited countries where the incidence of pneumonia is highest, progress will be evidently slower.

Insofar as the *other diseases of the respiratory system* are concerned, many differences are apparent, with substantial declines in the less backward countries, and slighter in the others. This must be attributed to the fact that in the former, the death rate for tumors appears higher, and also there is a more advanced diagnostic approach. In effect, in the countries where mortality for this group of diseases appears to have declined the most, such as Spain and Rumania, the death rate from other causes (pneumonia and tuberculosis of the respiratory system), appears the highest.

Let us now examine the *mortality from heart diseases*. In this field, it is a fact that, aside from what has happened for the other disease groups, the death rate has increased to the extent of being five times as high as at the beginning of the century (Sweden, Hungary, etc.), and in other cases twice as high, with an average of 50 per cent increase. Naturally, one should take into account the differences existing in the age composition of the population of different countries, as in the population of the same country in different periods, but even allowing for such a factor, there would not be substantial variations.

Let us now see if the *data pertaining to extra-European countries provide elements confirming the observations we have made*. Data concerning tuberculosis of the respiratory system show a substantial decline, averaging 38 per cent, with the exception of Colombia and Japan, but less than the European one. The death rate for bronchitis has dropped to an extent often comparable with the decreases recorded in Europe, the general decline averaging 74 per cent. The decline in mortality from pneumonia is also substantial (33 per cent, on the average), and approximates the European one. Data for other diseases of the respiratory system are somewhat scanty, but nevertheless show a marked decrease, more apparent than in Europe. In regard to heart diseases, owing to their greater incidence in such countries as New Zealand, Canada, the Union of South Africa and the U. S. A., mortality-increase is generally higher than in the above-mentioned European countries, and average 88 per cent. The only country recording a decline is Brazil, but we know that available data apply only to cities, and thus do not give a true picture of the real incidence of heart disease.

Analogies in trends for the five great groups of chest diseases are thus evident in the two groups of countries considered, though

the former is, both from a constitutional and a geographic point of view, more homogeneous and possesses an older civilization, while the latter is heterogeneous and has a population consisting mostly of white immigrants and their descendants.

Taken as a whole, for both groups of countries, *the death rate for chest diseases does not at present show marked differences, averaging 34 per cent in European and 32 per cent in extra-European countries.* At the beginning of the century it was, respectively, 32 and 25 per cent.

A first, more detailed consideration, shows that this is due to the fact that, while the rate from pneumonia and other diseases of the respiratory system was practically the same, figures were higher in Europe for tuberculosis of the respiratory system, bronchitis and especially heart diseases. In Europe, today, the rate from tuberculosis is lower, the rate from heart diseases is even higher (the difference is less marked) and the rate from other diseases of the respiratory system, especially from chest tumors, has increased.

If this is a synthetic picture, a *more analytical examination provides interesting details.* In the first place, the impression of a uniform incidence of chest diseases on the general death rate shown by the general data, is attenuated. In effect, in the first period, percentages in Europe vary from 19 per cent (Portugal) to 37 per cent (Northern Ireland), and in the extra-European countries from 20 per cent (South Africa) to 32 per cent (U. S. A.); in the later period, in Europe, from 25 per cent (Holland) to 41 per cent (Sweden), and in the other countries from 10 per cent (Shanghai) to 44 per cent (Turkey). Thus, in the second group of countries percentages are susceptible to greater variations, both on account of the different trends in the chest diseases group and of the differences in the general death rate.

The last figures confirm the statement that chest diseases, as a whole, result in a substantial mortality representing about a third of the death rate from all causes, and shows a tendency to increase because of the increase of the rate for heart disease, which counteracts and overcomes the decrease in the mortality from other chest diseases.

We have already said that a further, early decrease in the mortality from pneumonia can be anticipated, thanks to the wider use of sulfa drugs and penicillin.

Though in some countries, such as Denmark, Holland, U. S. A., Australia, New Zealand and South Africa, the death rate from tuberculosis of the respiratory system has already declined to a considerably low level, one can think that further improvement is possible, especially in countries of more recent tubercularization,

TABLE II: SECOND PERIOD
DEATH RATES FROM CHEST DISEASES
(Per 1,000 Population)

European Countries	Years	All Chest Diseases	Diseases of the Heart	Tuberculosis of the Respiratory System	Pneumonia	Bronchitis	Other Diseases of the Respiratory System	All Causes
Austria	1936-38	4.97	2.49	0.84	1.20	0.15	0.29	13.51
Belgium	1943-45	4.87	2.68	0.64	0.72	0.32	0.50	14.59
Czechoslovakia	1945	4.08	2.04	0.94	0.82	0.09	0.17	11.67
Denmark	1946-48	3.38	2.31	0.25	0.87	0.06	0.09	9.73
Ireland	1943-45	5.71	3.34	1.03	0.62	0.50	0.21	14.87
Finland	1944-46	5.25	2.62 ^a	1.65	0.98 ^b	— ^c 1	— ^d 4	13.44
France	1943-45	5.59	2.49	1.09	0.94	0.10	0.96	17.59
Germany	1937-39	3.72	1.76	0.58	0.93	0.16	2.28	12.65
England and Wales	1945-47	5.46	3.25	0.56	0.59	0.80	0.26	11.48
North Ireland	1946-48	4.11	2.68	0.47	0.45	0.36	0.15	9.81
Iceland	1940	2.90	1.34	0.59	0.75	0.15	0.07	9.91
Italy	1944-46	3.99	1.91	0.57	1.16	0.17	0.18	11.23
Norway	1944-46	2.59	1.07	0.56	0.76	0.08	0.12	9.91
Holland	1944-46	2.93	1.55	0.51	0.57	0.12	0.16	11.94
Portugal	1946-48	4.09	1.58	1.29	0.87	0.21	0.15	13.59
Rumania	1937-39	6.18	1.30	1.40	2.79	0.22	0.48	19.03
Scotland	1945-47	5.05	3.30	0.61	0.49	0.48	0.18	12.30
Spain	1946-48	4.47	1.94	0.95	0.94	0.37	0.27	11.79
Sweden	1943-45	4.28	3.04 ^e	0.57	0.53	0.05	0.08	10.68
Switzerland	1943-45	3.55	2.07	0.62	0.58	— ^f 2	0.29 ^g	11.47
Hungary	1939-41	6.56	2.53	1.56	2.07	0.09	0.31	17.96
Total In 21 European Countries		4.53	2.18	0.78	1.01	0.25	0.32	13.24

TABLE II: SECOND PERIOD (Continued)
 European Countries DEATH RATIOS FROM CHEST DISEASES
 (Proportionate Mortality per 1,000 Deaths from All Causes)

Austria	1936-38	36.79	18.43	6.22	8.88	1.11	2.15	100
Belgium	1943-45	33.38	18.39	4.39	4.93	2.19	3.43	100
Czechoslovakia	1945	34.96	17.48	8.05	7.03	0.77	1.46	100
Denmark	1946-48	34.74	23.74	2.57	6.88	0.62	0.92	100
Eire	1943-45	38.40	22.46	6.93	4.17	3.36	1.41	100
Finland	1944-46	39.06	19.49 ^e	12.28	7.29 ^d	— ^a	— ^a	100
France	1943-45	31.78	14.15	6.20	5.34	0.57	5.46	100
Germany	1937-39	29.41	13.91	4.58	7.36	1.26	2.21	100
England and Wales	1945-47	47.56	28.31	4.88	5.14	6.97	2.26	100
North Ireland	1946-48	41.90	27.32	4.79	4.59	3.67	1.53	100
Iceland	1940	29.26	13.52	5.95	7.57	1.51	0.71	100
Italy	1946-48	35.53	17.01	5.08	10.33	1.51	1.60	100
Norway	1944-46	26.13	10.80	5.05	7.67	0.81	1.21	100
Holland	1944-46	24.54	12.98	4.27	4.77	1.00	1.34	100
Portugal	1946-48	30.10	11.63	9.49	6.40	1.54	1.10	100
Rumania	1937-39	32.47	6.83	7.36	14.66	1.16	2.52	100
Scotland	1945-47	41.06	26.33	4.96	3.98	3.90	1.46	100
Spain	1946-48	37.91	16.45	8.06	7.97	3.14	2.29	100
Sweden	1943-45	40.07	28.46 ^f	5.34	4.96	0.47	0.75	100
Switzerland	1943-45	30.95	18.05	5.40	5.06	— ²	2.53 ^b	100
Hungary	1939-41	36.53	14.09	8.68	11.52	0.50	1.73	100
Total in 21 European Countries		34.21	16.46	5.81	7.63	1.89	2.42	100

NOTE: 1 Included in pneumonias.—2 Included in the other diseases of respiratory system.—3 Bronchitis and other diseases of respiratory system included.—4 Included in pneumonias.—5 Bronchitis included.—6 Other diseases of circulatory system included.—7 Other diseases of circulatory system.

TABLE II: SECOND PERIOD (Continued)
DEATH RATES FROM CHEST DISEASES
(Per 1,000 Population)

Extra-European Countries	Years	All Chest Diseases	Diseases of the Heart	Tuberculosis of the Respiratory System	Pneumonias	Bronchitis	Other Diseases of the Respiratory System	All Causes
Brazil	1944	6.31	2.79	1.56	0.13	0.27	20.13	
Canada	1947-48	3.53	2.63	0.34	0.45	0.03	0.08	9.44
Ceylon	1945-47	2.93	0.41	0.52	1.40	0.20	0.39	18.79
Chile	1940-42	8.13	1.78	2.26	3.89	0.06	0.14	20.95
China (Shanghai)	1938-40	1.11	0.16	0.42	0.24	0.20	0.09	11.49
Colombia	1936	2.87	0.34	0.40	1.45	0.68	—	15.32
Australian Confed.	1945-47	2.20	1.22	0.29	0.47	0.08	0.13	9.68
Japan	1943	4.82	0.61	1.84	1.57	0.31	0.47	16.49
Hawaii	1937-39	2.72	1.23	0.66	0.78	0.05	—	8.20
Hong Kong	1926-28	6.04	0.24	1.81	3.98	—	—	15.73
Mexico	1940-42	5.19	0.57	0.48	3.33	0.62	0.19	22.71
New Zealand	1942-44	4.13	3.26	0.29	0.31	0.12	0.14	9.62
Panama	1929-31	3.29	0.51	1.48	0.81	0.25	0.22	10.98
U. S. A.	1944-46	3.91	3.04	0.35	0.42	0.02	0.08	10.05
Turkey	1942-44	5.63	1.94	1.18	1.74	0.05	0.28	12.67
South Africa	1935-37	3.02	1.30	0.27	0.96	0.21	0.28	10.03
Uruguay	1940-42	3.41	1.47	0.95	0.74	0.01	0.23	9.50
Total in 17 Extra-European Countries		4.21	1.92	0.34	1.08	0.17	0.20	13.31
Total in 33 European and Extra-European Countries		4.38	2.06	0.81	1.04	0.21	0.26	13.27

TABLE II: SECOND PERIOD (Continued)
DEATH RATIOS FROM CHEST DISEASES
(Proportionate Mortality per 1,000 Deaths from All Causes)

Extra-European Countries	Years	All Chest Diseases	Diseases of the Heart	Tuberculosis of the Respiratory System			Bronchitis	Other Diseases of the Respiratory System	All Causes
				Pneumonia	Tuberculosis	Pneumonia			
Brazil	1944	31.35	7.60	13.86	7.87	0.65	1.34	1.00	
Canada	1947-48	37.39	27.86	3.60	4.77	0.32	0.85	1.00	
Ceylon	1945-47	15.59	2.18	2.77	7.45	1.06	2.07	1.00	
Chile	1940-42	38.81	8.50	10.79	18.57	0.29	0.67	1.00	
China (Shanghai)	1938-40	9.66	1.39	3.65	2.09	1.74	0.78	1.00	
Colombia	1936	18.73	2.22	2.61	9.46	4.44	—	1.00	
Australian Confed.	1945-47	22.73	12.80	2.99	4.86	0.83	1.34	1.00	
Japan	1943	29.23	3.70	11.16	9.52	1.88	2.85	1.00	
Hawaii	1937-39	33.17	15.00	8.05	9.51	0.61	—	1.00	
Hong Kong	1926-28	38.40	1.53	11.51	25.30	—	—	1.00	
Mexico	1940-42	22.85	2.51	2.11	14.66	2.73	0.84	1.00	
New Zealand	1942-44	42.93	33.89	3.01	3.22	1.25	1.45	1.00	
Panama	1929-31	29.96	4.64	13.48	7.38	2.28	2.00	1.00	
U. S. A.	1944-46	38.90	30.25	3.48	4.18	0.20	0.80	1.00	
Turkey	1942-44	44.43	15.31	9.31	13.73	0.39	2.21	1.00	
South Africa	1935-37	30.11	12.96	2.69	9.57	2.09	2.79	1.00	
Uruguay	1940-42	35.80	15.47	10.00	7.79	0.10	2.42	1.00	
Total in 17 Extra-European Countries		31.63	14.42	6.31	8.11	1.28	1.51	1.00	
Total in 38 European and Extra-European Countries		33.01	15.52	6.11	7.84	1.58	1.96	1.00	

or where tuberculosis control is not up-to-date, both in the preventive phase, with vaccination, and in the therapeutic phase, with an early administration of antibiotics and other measures.

The figures of the incidence of bronchitis are at present quite low, so that among the other diseases of the respiratory system the only source of preoccupation is to be found in tumors. These, on the other hand, when localized in the lungs or pleura, result in a comparatively small fraction of the total death rate for tumors. Insofar as women are concerned, tumors of the breast should have been taken into account, since their importance is great, but this was not possible *for lack of reliable data*.

Without underestimating the magnitude of the problems originating from other diseases, it is nevertheless impossible not to recognize and emphasize that *heart diseases, together with tumors, now constitute in the great majority of the countries of the world, the major source of concern for those entrusted with the responsibility of protecting public health*.

In the European countries considered (Austria, Belgium, Czechoslovakia, Denmark, Eire, Finland, France, Germany, Hungary, Iceland, Italy, the Netherlands, Norway, Portugal, Rumania, Spain, Sweden, Switzerland, United Kingdom), at the beginning of the century 4,300,000 people died every year, of which about 1,500,000 died of chest diseases; deaths for heart diseases numbered only 350,000. At present, an equal total number of deaths, 1,500,000 are due to chest diseases, of which over 700,000 are caused by diseases of the heart. Mortality from tuberculosis has instead decreased from 350,000 to about 250,000.

In the group of extra-European countries (Australia, Brazil, Canada, Ceylon, Chile, Colombia, Hawaii, Hong Kong, Japan, Mexico, New Zealand, Panama, Turkey, Union of South Africa, United States of America, Uruguay), in which, as a whole, the population increase has been greater, deaths from all causes have increased from 2,700,000 to 3,900,000; the number of deaths for chest diseases has practically doubled, increasing from 660,000 to 1,250,000; mortality from tuberculosis of the respiratory system has grown from 180,000 to about 280,000; deaths from heart diseases have sharply risen from 180,000 to 570,000.

The increase in the death rate for heart diseases, contrasting with the decrease in the rate for diseases of the respiratory system must be considered as a symptom of progress in the public health conditions of a country. This does not mean that a better defensive organization is not necessary for the old age groups so as to avoid a stasis of progress in this field, and permit aged persons to contribute to the active cycle of society as frequently and as long as possible. But it must not be forgotten that heart diseases, even if

substantially linked to the deterioration due to time and strenuous ways of life, even if it is true that the use of tobacco and alcohol may interfere with the heart's ability and resistance, originate, in a considerable number of cases, from rheumatic diseases, syphilis and infantile exanthematous diseases. *Thus, the greatest attention must be consecrated to the problems of child health, in order to realize a prevention and defense system so that young people may approach old age with no impairment of their health.*

Undoubtedly, the increase in the average life span brings about an increase in the death rate for heart diseases which are typical of old age, and the decline in the death rate from all causes allows people to reach old age, who in the past were eliminated by other diseases before the symptoms of heart diseases became apparent.

What is the importance of the fact that the death rate from diseases of the respiratory system, and especially from tuberculosis and pneumonia, has declined in the last half-century almost in the same proportion to which heart diseases have increased? Even if the greater incidence of heart diseases is not to be charged to the heart itself, since the decline in the selective work of infectious diseases attacking young men has certainly had its bearing, there are many reasons to believe that there is a connection between trends in mortality for diseases of the respiratory system and trends in mortality from heart diseases.

In effect it must be noted that tuberculosis has, and had even more in the past, a high incidence (from about 25 to over 50 per cent) in the intermediate age groups (people between 15 and 45 years old). This is sufficient to demonstrate its possible action from a selective standpoint.

Furthermore, it must not be forgotten that the pneumonia mortality curve in different ages follows, with the exception of the first years of life, the curve of heart diseases. One is consequently led to think that when the pneumonia death rate was higher, early heart failures (with more or less apparent lesions) were actually responsible for a great number of deaths attributed to the latter cause.

This investigation has also taken into account the mortality from chest diseases with respect to sex, in some European and extra-European countries. Available data do not permit definite statements, but point out, nevertheless, that more women die of heart diseases in countries in which the mortality for tuberculosis of the respiratory system is in an endemic phase, as against countries where tuberculosis is in an epidemic or transitional phase, in which the rate is higher for men.

Data available in some countries, according to race, do not offer the opportunity for reliable deductions, so that, for the present

TABLE III
RATIO OF DEATHS IN TWO DIFFERENT PERIODS
(Basic Period Equals 100)

European Countries	Basic Period Equal 100	Comparative Period	Tuberculosis of the Res- piratory System	Diseases of the Heart	Pneumonia	Bronchitis	Other Diseases of the Res- piratory System	All Chest Diseases	All Causes
Austria	1921-23	1936-38	115.81	39.07	96.77	—	—	89.87	83.18
Belgium	1900-02	1943-45	150.56	47.76	23.92	—	—	79.44	81.69
Czechoslovakia	1937	1945	97.61	87.04	68.33	50.00	53.12	83.78	89.08
Denmark	1900-02	1946-48	248.39	16.45	40.85	16.22	36.00	71.76	61.35
Eire	1900-02	1943-45	878.94	47.46	75.61	25.64	56.76	101.93	82.26
Finland	1911-13	1944-46	—	63.71	—	—	—	202.70	83.07
France	1900-02	1943-45	174.13	35.39	70.15	10.53	69.56	68.42	85.51
Germany	1911-13	1937-39	107.97	43.61	43.46	—	—	72.94	78.91
England and Wales	1900-02	1945-47	215.23	47.75	45.04	54.79	86.67	83.64	66.90
North Ireland	1922-24	1946-48	182.02	38.52	43.27	32.43	71.43	73.13	64.16
Iceland	1911-15	1940	223.33	53.64	43.35	32.61	58.33	71.60	70.84
Italy	1900-02	1946-48	104.94	51.35	50.43	86.29	54.54	52.92	49.66
Norway	1900-02	1944-46	194.54	28.28	116.92	8.00	300.00	63.83	66.82
Holland	1901-03	1944-46	287.04	38.06	64.04	16.90	—	84.20	73.12
Portugal	1902-04	1946-48	192.68	135.79	114.47	33.87	55.55	119.24	75.92
Rumania	1901-03	1937-39	104.84	47.94	150.00	44.00	20.78	69.99	74.51
Scotland	1900-02	1945-47	221.48	39.61	34.51	34.29	46.15	80.93	68.68
Spain	1900-02	1946-48	132.88	67.38	65.73	15.88	21.60	56.65	43.01
Sweden	1901-03	1943-45	490.32	25.67	39.26	77.04	47.06	84.25	73.35
Switzerland	1911-13	1943-45	140.82	40.00	36.25	—	107.41	64.54	77.66
Hungary	1900-02	1939-41	550.00	83.42	145.77	20.93	68.89	141.68	125.07
Total in 21 European Countries	149.31	53.42	59.76	29.41	96.97	78.24	73.39		

TABLE III (Continued)
 RATIO OF DEATHS IN TWO DIFFERENT PERIODS
 (Basic Period Equals 100)

Extra-European Countries	Basic Period Equal 100	Comparative Period	Tuberculosis			Bronchitis	Other Diseases of the Res- piratory System	All Chest Diseases	All Causes
			Diseases of the Heart	of the Res- piratory System	Pneumonia				
Brazil	1908-10	1944	78.46	89.71	86.81	—	—	91.71	89.87
Canada	1929-31	1945-47	219.17	58.62	66.18	75.00	—	141.20	96.23
Ceylon	1930-32	1940-42	241.17	88.14	102.19	76.92	60.94	96.38	82.96
Chile	1911-13	1940-42	158.93	90.40	104.85	46.15	14.26	96.32	67.86
China (Shanghai)	1933-35	1938-40	133.33	95.45	70.59	44.44	81.82	53.62	88.66
Colombia	1915-17	1936	283.33	137.93	190.78	133.33	—	146.42	97.83
Australian Confed.	1905-07	1945-47	190.63	36.25	88.68	22.86	—	94.83	88.00
Japan	1900-02	1943	124.49	134.31	145.37	26.72	85.45	103.43	80.44
Hawaii	1918-20	1937-39	178.26	41.51	82.10	16.13	—	58.12	54.34
Hong Kong	1909-11	1926-28	53.33	101.68	143.16	—	—	120.56	90.87
Mexico	1934-35	1940-42	126.67	120.00	100.91	101.64	90.48	104.43	97.13
New Zealand	1903-05	1942-44	366.29	43.94	60.78	30.00	63.63	153.53	98.86
Panama	1908-10	1929-31	268.42	106.47	69.23	92.59	73.33	98.80	79.28
U.S.A.	1907-08	1944-46	188.82	22.29	23.19	6.90	4.00	75.63	62.73
Turkey	1931-33	1942-44	131.97	107.27	9.23	55.56	127.27	116.80	104.71
South Africa	1913-15	1935-37	220.34	67.50	57.38	87.50	186.67	151.75	100.10
Uruguay	1901-03	1940-42	213.04	100.00	70.48	5.00	74.19	106.23	71.21
Total In 17 Extra-Euro- pean Countries			186.23	62.22	66.90	26.15	55.55	83.04	65.24
Total In 38 European and Extra-European Countries	157.25	57.04	61.54	26.92	76.47	79.06	70.29		

at least, it is possible only to observe that the death rate from heart diseases is the highest among the white population and males.

One may thus conclude that the death toll for chest diseases, in all countries surveyed, amounts to 2,792,695 persons, or 7,651 deaths per diem. Considering that the total population on which data are available is about 30 per cent of the total world population, one can assume, at least theoretically, that the above figures must be more than trebled in order to obtain the total world death toll for chest diseases.

A Congress of scientists in diseases of the chest must thus bear in mind that every single minute about 18 persons die of one of the different morbid affections of the heart and the respiratory system. No single disease, nor group of diseases, has a comparable incidence!

Furthermore, in the chest are to be found the major affections which medical science and technique can control: for this reason society appeals to the chest physician including cardiologists and phthisiologists, for the alleviation of human suffering.

Trends in the present Congress, as well as the results which have arisen or will arise from our discussions, will definitely assure that all our energies and all our efforts are consecrated to adding new accuracy to the diagnosis, and to improving therapy of all morbid affections of the chest, thus scoring further victories over death.

SUMMARY

A critical analysis is presented concerning mortality rates in various parts of the world. The data considered pertain to tuberculosis, pneumonia, bronchitis, miscellaneous diseases of the lung and pleura, with special reference to neoplasms, and heart disease. Illustrative tables show in details the general trends during the past decades. Also, factors are appraised which have definite bearing on the statistical data.

RESUME

L'auteur fait une analyse critique des courbes de mortalité dans différentes parties du monde. Les éléments envisagés comprennent: tuberculose, pneumonie, bronchite, et affections diverses du poumon et de la plèvre, en particulier les cancers, ainsi que les affections cardiaques. Des tableaux montrent en détail les tendances générales des statistiques pendant les dix dernières années. Cette étude est suivie d'une appréciation des différents facteurs qui influent nettement sur les éléments statistiques.

Sir Alexander Fleming Receives College Medal



Sir Alexander Fleming was presented with the College Medal and Certificate of Award for meritorious achievement in the specialty of diseases of the chest at the First International Congress on Diseases of the Chest held in Rome, Italy, September 17-22, 1950. The Award was made by Dr. Jay Arthur Myers, Minneapolis, Minnesota, Chairman of the Committee on College Awards, at the Inaugural Ceremony of the Congress held on Sunday, September 17, at the Palazzo Barberini in Rome.

August 6, 1881, is one of the important dates in history. On that day Alexander Fleming, who was destined to become one of the greatest benefactors of humanity of all time, was born at Lochfield Farm in the moors on the borders of Ayrshire and Lanarkshire. At the age of 14 years he went to London and between the ages of 16 and 20 worked in the office of the American Shipping Lines. In 1902, through senior entrance scholarship in natural science he entered St. Mary's Hospital Medical School in London. Between 1902 and 1906 he took nearly all class prizes and scholarships in this institution, where he won the degrees of Bachelor of Medicine and Bachelor of Science. In 1906, on qualification he entered Sir Almroth Wright's laboratory at St. Mary's Hospital where he has remained for 44 years. In 1908 he became a Fellow in the Royal College of Surgeons. During the first World War he was Captain in the Royal Medical Corps and was mentioned in dispatches. When the war was over, he was appointed Hunterian professor, Royal College of Surgeons in 1919. Nine years later he became professor of bacteriology, London University, at St. Mary's Hospital Medical School.

Throughout the ages incapacitating and killing diseases has plagued the people of the world. Just prior to and soon after Sir Alexander Fleming's birth, the causes of some of these diseases had been discovered, including leprosy (1874), anthrax (1877), gonorrhea (1879), surgical and puerperal infections (1878-79), typhoid fever (1880), lobar

pneumonia (1881), glanders and tuberculosis (1882), erysipelas and diphtheria (1883), cholera and tetanus (1884), Malta fever and cerebral spinal meningitis (1887), syphilis (1906), and typhus fever (1915). The discovery of these enemies of human health and life was the chief glory of 19th century medicine.

The next important problem was to find methods of combating the organisms which produced these diseases. Pasteur had already learned the value of heat in destroying pathogenic organisms, and Lister employed antiseptics and devised methods of keeping wounds from becoming infected. However, these methods were of little avail once pathogenic organisms had invaded the tissues and had set up the diseases for which they were specific. Then came the antitoxins and immunizing agents which did not destroy pathogenic microorganisms but only neutralized their poisons or aided the body in building defenses against them. Numerous chemical agents were found to be germicidal when brought into direct contact with germs of disease outside the body but they could not be introduced into human tissues in sufficient concentrations to serve as germicides without at the same time destroying cells and tissues.

In all the years of Dr. Fleming's work with Sir Almroth Wright, he was deeply interested in the destruction of bacteria by leukocytes and made notable contributions in this field. During the 1914-18 war, he spent much time investigating problems in connection with septic wounds and he was impressed with the antibacterial power of the leukocytes contained in pus which exuded from septic wounds. His studies on such wounds proved that chemical antiseptics in common use were more destructive to leukocytes than they were to bacteria and therefore such antiseptics were unlikely to be successful in treatment.

In 1922 he described a powerful antibacterial ferment occurring naturally in human tissues and secretions, in the whites of the domestic hen's eggs and elsewhere, which he named lysozyme.

In September, 1928, while Dr. Fleming was working on the variation of staphylococcus colonies, his studies required the occasional temporary removal of the covers of culture plates, thus exposing them to contamination from the air. Later a mold colony was found to have developed toward one side of a culture plate. Dr. Fleming was astonished to see that for some considerable distance around the mold growth, the staphylococcal colonies were undergoing lysis and these previously well-grown staphylococcal colonies were now only faint shadows of their former selves. Always being on the lookout for new bacterial inhibitors, he immediately transferred some of the spores from the mold colony to a culture tube. Thus a pure culture was obtained. He later found that this culture fluid when diluted from 500 to 800 times would completely inhibit the growth of staphylococci. In fact, it was two or three times as strong in that respect as pure carbolic acid. The mold he was growing belonged to the genus *Penicillium* and was later identified as *Penicillium notatum*. Therefore, he named the active antibacterial substance from this mold "penicillin."

He then conducted studies which showed that colonies of such organisms as *B. coli* and *H. influenzae* are not inhibited by penicillin while others such as staphylococcus, streptococcus, pneumonococcus, gonococcus and the diphtheria bacillus would not grow in its presence.

The information which Dr. Fleming then desired most was whether

penicillin was poisonous to human leukocytes. Carefully conducted experiments proved that it was not. Moreover, he found that it was not toxic when injected into animals. Thus he had produced an antiseptic substance which then was unique in having a strong inhibitory effect on many of the common bacteria which infect the human body but was not toxic to animals or to human leukocytes. Concerning penicillin, in his original paper published in 1929, he said: "It may be an efficient antiseptic for application to or injection into areas infected with penicillin-sensitive microbes." In 1931, he said: "It is quite likely that it or a chemical of a similar nature will be used in the treatment of septic wounds." This was several years before the sulfonamides were introduced and when the only effective antibacterial chemotherapy for any disease was the modifications of salvarsan used in the treatment of syphilis.

Although Dr. Fleming made some tentative observations on the local antiseptic action of the crude penicillin fluid with moderate success, its instability and the smaller number of septic cases in hospitals in peace time led to its clinical use not being seriously pursued. It was not until 1938 that the Oxford workers started their investigations on penicillin. These included its physical and chemical properties, methods of purification, chemotherapeutic action in animals and later in humans. Then came its industrial production and studies of its chemistry, both in England and the United States.

With the discovery of penicillin by Fleming, a vast field of research was opened leading to the production of other antibiotics, including streptomycin and aureomycin. With research still in progress, it now appears that there will be few, if any, bacterial infections which will not respond satisfactorily to one or more antibiotics.

Since 1940 Dr. Fleming has been showered with honors from universities, academies and societies from all over the world. He has received the honorary Doctor of Science Degree from several universities, including Durham, Pennsylvania, Princeton, Harvard, Dublin, Queens, Bristol, Belfast, Madrid, London and National of Ireland.

The degree, Doctor Honoris Causa, has also been granted by many universities, including Paris, Brussels, Louvain, Liege, Rome, Brazil and Gratz. He has also been awarded many medals and prizes, such as the John Scott Medal and Prize, Philadelphia; Humanitarian award, Variety Clubs of America; Moxon Medal, Royal College of Physicians; "Harben" Gold Medal, Royal Institute of Public Health and Hygiene; Albert Gold Medal, Royal Society of Arts; Medal in Therapeutics, Worshipful Society of Apothecaries, London; Honorary Medal, Royal College of Surgeons; Gold Medal, Royal Society of Medicine; Gold Medal, Royal Academy of Medicine, Seville; Addingham Medal; Bimala Churn Law Gold Medal, Indian Association for the Cultivation of Science.

He has been made orator and lecturer in many universities throughout the world. A large number of medical societies, national and international, have extended Dr. Fleming honorary memberships, fellowships, etc. In 1945 he was president of the Society for Microbiology and in 1948 he was Nobel Laureate in Physiology and Medicine. Dr. Fleming has published many papers on bacteriology, serology, immunity and chemotherapy. These include the original descriptions of lysozyme and penicillin. He continues as Principal of the Wright-Fleming Institute of Microbiology, St. Mary's Hospital Medical School, London, and is

June, 1951

Professor Emeritus in the London University and member of the Senate of that institution.

In the earlier years of his life he was especially interested in swimming and rifle shooting. He was for 14 years a private in the London Scottish Rifle Volunteers. Now gardening is his chief recreation.

Rarely if ever in the world's history has a physician meritoriously received so many honors and so much recognition from so many parts of the world. Dr. Fleming's contributions are applicable to every woman, man and child, regardless of vocation, race or location, as well as their domestic animals.

When Jenner presented a successful method of vaccinating against smallpox, it was said that the span of human life was increased by four years. It does not seem too much to predict that Dr. Fleming's discovery of penicillin and the subsequent developments will increase the span of human life on the earth by at least a decade. It can now be said that these developments initiated by Dr. Fleming have contributed more to happiness, well being and health of the world's citizenry than any other advancement in history.

Sir Alexander Fleming, to you, one of the world's most renowned citizens of all time and an unsurpassed benefactor of humanity, I have been delegated the high honor of presenting the Gold Medal of the International Congress on Diseases of the Chest.

Jay Arthur Myers.

First International Congress on Diseases of the Chest

The First International Congress on Diseases of the Chest, sponsored by the Council on International Affairs of the American College of Chest Physicians and the Carlo Forlanini Institute, was held in Rome, Italy, September 17-22, 1950.

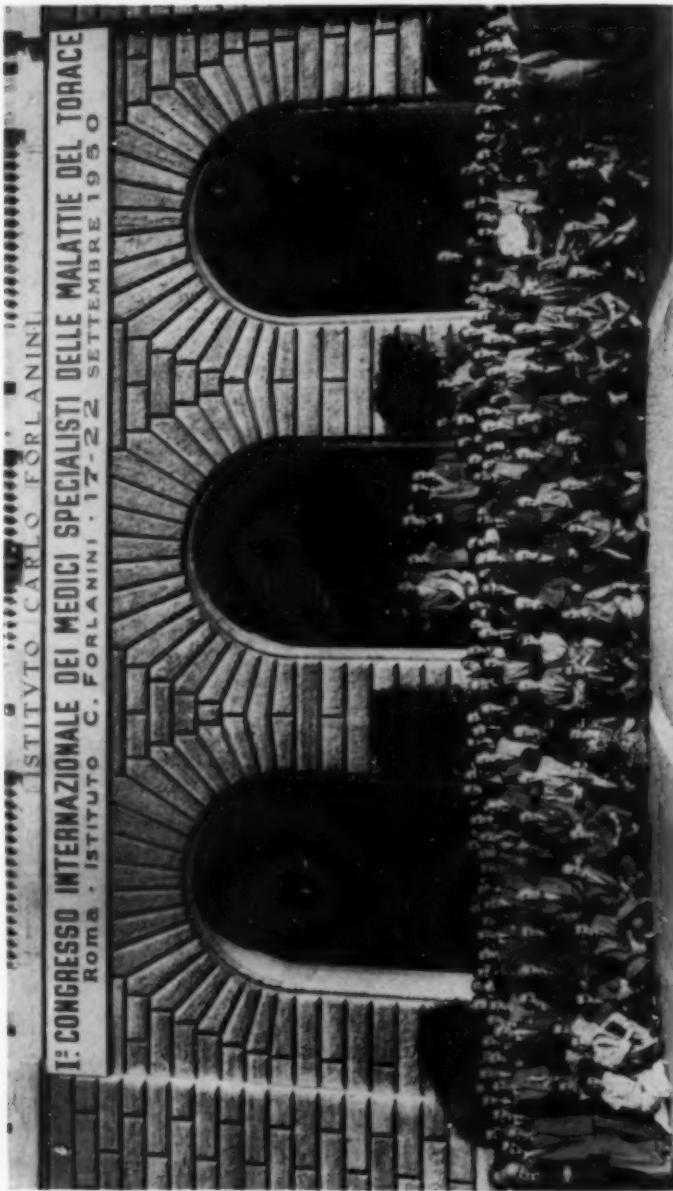
The Congress was endorsed by the Italian Government, the National Institute of Social Welfare and the Italian Federation Against Tuberculosis.

In attendance were approximately 1,000 delegates and their wives from the following 42 countries:

Algeria	India
Argentina	Israel
Australia	Italy
Austria	Jugoslavia
Belgium	Lebanon
Brazil	Mexico
Canada	Norway
Ceylon	Pakistan
Chile	Peru
Colombia	Philippines
Cuba	Portugal
Denmark	South Africa
Egypt	Spain
El Salvador	Sweden
England	Switzerland
Finland	Syria
France	Turkey
Germany	Uruguay
Greece	U. S. A.
Guatemala	U. S. S. R.
Holland	Venezuela

Honorary Committee

- Hon. Luigi Einaudi
President, Republic of Italy.
Hon. Alcide De Gasperi
Prime Minister.
Hon. Carlo Sforza
Minister of Foreign Affairs.
Hon. Mario Scelba
Minister of Internal Affairs.
Hon. Achille Marazza
Minister of Labor and Social Welfare.
Hon. Guido Gonella
Minister of Public Instruction.
Hon. Prof. Mario Cotellessa
High Commissioner of Public Health.
Hon. Salvatore Rebecchini
Mayor of Rome.
Prof. Giuseppe Cardinali
Dean, University of Rome.



Delegates in attendance at the First International Congress on Diseases of the Chest,
Rome, Italy, September 17-22, 1950.

- Prof. Vittorio Puntoni
President, Faculty of Medicine and Surgery,
University of Rome.
- Hon. Angelo Corsi
President, National Institute of Social Welfare.
- Prof. Vittorio Emanuele Orlando
President, National Society of Dante Alighieri.
- Prof. Gustavo Colonnetti
President, National Foundation for Research.
- Prof. Gennaro Costantini
President, Italian Federation Against Tuberculosis.
- Dr. Tullio Lazze
President, Italian Medical Association.
- Dr. Brock Chisholm
Director General, World Health Organization.
- Hon. Rafael Ocampo Gimenez
Ambassador from the Argentine.
- Hon. André Motte
Ambassador from Belgium.
- Hon. Pedro de Moraes Barros
Ambassador from Brazil.
- Hon. Jean Desy
Ambassador from Canada.
- Hon. Hector Arancibia Laso
Ambassador from Chile.
- Hon. Jacques Fouques-Duparc
Ambassador from France.
- Hon. Dimitri Capsalis
Ambassador from Greece.
- Hon. Fathoullah Pakrevan
Ambassador from Iran.
- Hon. Carlos Dario Ojeda
Ambassador from Mexico.
- Hon. José Antonio de Sangroniz y Castro
Ambassador from Spain.
- Hon. Henrique Gil-Fortoul
Ambassador from Venezuela.
- Hon. Huseyn Ragip Baydur
Ambassador from Turkey.
- Hon. James Clement Dunn
Ambassador from the United States of America.
- Hon. Cyro Giambruno
Ambassador from Uruguay.
- Hon. Mohammed Osman Amiri
Minister from Afganistan.
- Hon. Johannes E. Schwarzenberg
Minister from Austria.
- Hon. Alfonso Uribe Misas
Minister from Colombia.
- Hon. Guillermo de Blank
Minister from Cuba.
- Hon. Otto Carl Mohr
Minister from Denmark.
- Hon. Porfirio Rubirosa
Minister from the Dominican Republic.
- Hon. Rodrigo Jacome
Minister from Ecuador.
- Hon. Harri Holma
Minister from Finland.

Hon. Jorge Luis Arriola
Minister from Guatemala.
Hon. Shlomo Ginossar
Minister from Israel.
Hon. Mladen Ivecovic
Minister from Jugoslavia.
Hon. Emilio Khoury
Minister from Lebanon.
Hon. Willem de Bylandt
Minister from the Netherlands.
Hon. Hans Fay
Minister from Norway.
Hon. Vicente Cerro Cebrian
Minister from Peru.
Hon. Francisco de Calheiros e Menezes
Minister from Portugal.
Hon. Francois Henri Theron
Minister from South Africa.
Hon. Christian Günther
Minister from Sweden.
Hon. René de Weck
Minister from Switzerland.

Official Government Delegates

Austria: E. F. Kux.
Brazil: Manoel de Abreu, Reginaldo Fernandez, Nogueira Martinez,
Pedro Sampeyo.
Ceylon: G. E. Ranawake.
Chile: Leoncio Andrade Cabezas.
Colombia: Jose Pablo Leyva, Rafael J. Mejia, Carlos Arboleda Diaz.
Cuba: Antonio Navarrete.
Denmark: Tage Kjaer.
Egypt: Abdel Raouf Hassam, Halim Ahmed Zaky.
Finland: N. K. Kivikanervo, P. E. A. Nylander.
Greece: Nicholas Oeconomopoulos, Basil Papanicolaou.
Guatemala: Joaquin Escobar, Alberto di Nepl.
Holland: H. R. Gerbrandy.
India: Ramon Viswanathan.
Israel: Maurizio Mendes.
Lebanon: Charles Coury, Papken Mugrditchian.
Mexico: Miguel Jimenez, Donato G. Alarcon.
Norway: M. D. Harboe, Alf Lorenz Oerback, Gerhard Herzberg,
Alexander Tuxen.
Pakistan: Mohammed Ibrahim.
Peru: Juan M. Escudero Villar, Juan. A. Macchiavello, Humberto
Valderrama, Ovidio Garcia Rosell, Fernando Wieland.
Philippine Islands: Miguel D. Canizares, Manuel A. Quisumbing.
Union of Soviet Socialist Republics: Pavel Lukomski, Fedor Uglov.
United States of America: Robert J. Anderson.
Uruguay: Jose Duomarco, Ricardo Rimini, Abelardo Rodriguez,
Jose Sapirza, Armando Sarno.
Venezuela: Juvenal Curiel, Giulio Criollo Rivas.
Yugoslavia: Robert Neubauer.

Official Delegates from Other Societies

- American College of Physicians,*
Edward A. Greco, U.S.A.
American College of Surgeons,
Richard H. Overholt, U.S.A.
Bengal Tuberculosis Association,
P. K. Ghosh, India.
International College of Surgeons,
Chevaller L. Jackson, U.S.A.
Royal College of Physicians,
Lord Moran, Great Britain.
World Health Organization,
J. B. McDougall, Geneva, Switzerland.

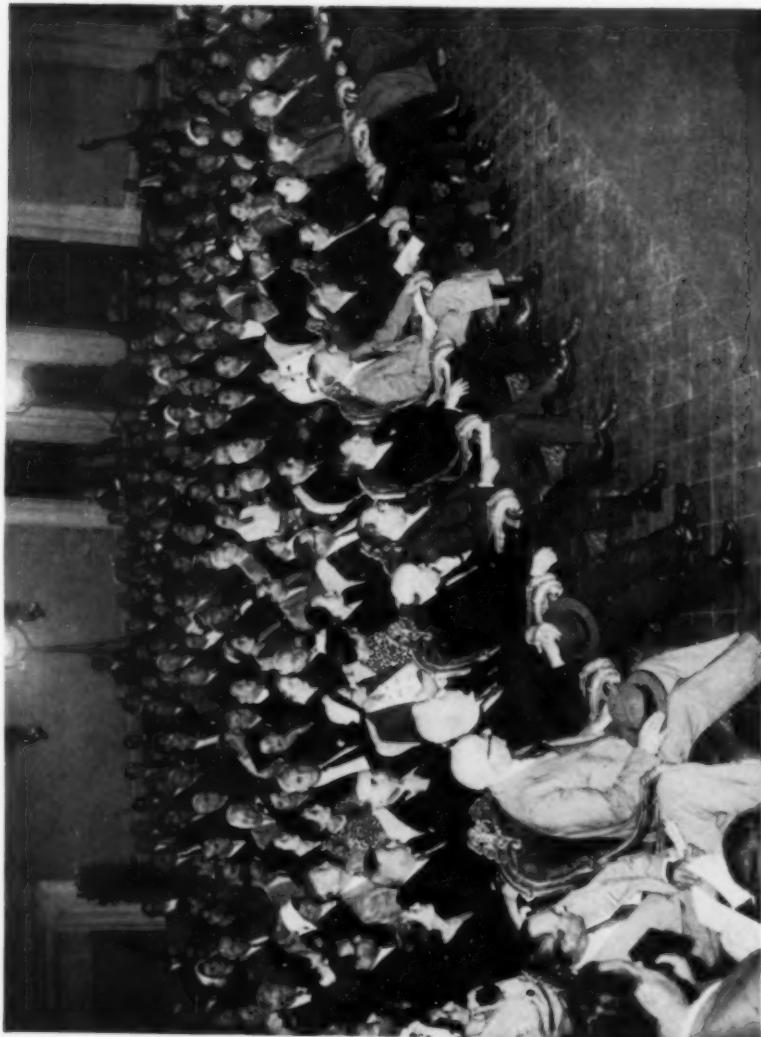
Executive Committee

- Louis Mark, U.S.A., President.
American College of Chest Physicians.
Chevaller L. Jackson, U.S.A.,
Chairman, Council on International Affairs.
Maurizio Ascoli, Italy
Andrew L. Banyai, U.S.A.
Pietro Barbieri, Italy
Etienne Bernard, France
Miguel Canizares, Philippine Islands
Saladino Cramarossa, Italy
Manoel de Abreu, Brazil
Giuseppe Franconi, Italy
Juan R. Herradora, U.S.A.
William A. Hudson, U.S.A.
Giovanni L'Eltore, Italy
Lopo de Carvalho, Portugal
Domenico Marotta, Italy
Gustav Maurer, Switzerland
Edgar Mayer, U.S.A.
Eugenio Morelli, Italy
Antonio Navarrete, Cuba
Nicholas Oeconomopoulos, Greece
A. Omodei Zorini, Italy
Richard H. Overholt, U.S.A.
J. Winthrop Peabody, U.S.A.
Moses J. Stone, U.S.A.
Raul F. Vaccarezza, Argentina

Murray Kornfeld, U.S.A., Executive Director

Committee on General Arrangements

- Eugenio Morelli, Italy
A. Omodei Zorini, Italy
Co-Chairmen
Alberto Canaperia Giovanni, Italy
Marcello Cancellario, Italy
Onofrio Ceino, Italy
Ademaro Conti, Italy
Noemi Scipioni Crostarosa, Italy
Vinicio De Meo, Italy
Umberto Gherlinzoni, Italy
Antonio La Penna, Italy
Vittorio Romeo, Italy
Mary Tyler, U.S.A.



Inaugural Session
Palazzo Barberini, Rome, Italy, September 17, 1950.



Inaugural Session
Palazzo Barberini, Rome, Italy, September 17, 1950.



*Sir Alexander Fleming addresses the delegates at the Inaugural Session,
Palazzo Barberini, Rome, Italy, September 17, 1950.*

Seated left to right: Murray Kornfeld, U.S.A.; Angelo Corsi, Italy; Jay Arthur Myers, U.S.A.; Louis Mark, U.S.A.; and Mario Cotellessa, Italy.



*Prof. A. Omodei Zorini, Italy, addresses the Inaugural Session at the
Palazzo Barberini, Rome, Italy, September 17, 1950.*

Inaugural Session

The Inaugural Ceremony of the First International Congress on Diseases of the Chest was held on Sunday morning, September 17, at 10:30 a.m. at the Palazzo Barberini in Rome.

Sir Alexander Fleming of London, England was presented with the College Medal by Dr. Jay Arthur Myers of Minneapolis, Minnesota, Chairman of the College Committee on College Awards.

Brief addresses were given by Professor Saraceni, representing the Mayor of Rome, Professor Mario Cotellessa, High Commissioner of Public Health for Italy, Dr. Eugenio Morelli, Professor of Tuberculosis at the University of Rome, Professor A. Omodei Zorini, Medical Director of the Carlo Forlanini Institute, Mr. Angelo Corsi, President of the National Institute of Social Welfare of Italy, and Dr. Gennaro Costantini, President of the Italian Federation Against Tuberculosis.

Mr. Murray Kornfeld, Chicago, Illinois, Executive Director of the Congress, introduced Dr. Louis Mark, Columbus, Ohio, President of the American College of Chest Physicians, who responded to the warm addresses of welcome.

Dr. Mark stated in his address: "... here we have evidence of the



*Sir Alexander Fleming receives the College Medal from Dr. Jay Arthur Myers,
Chairman, Committee on College Award.*



Scientific Assembly, First International Congress on Diseases of the Chest,
Carlo Forlanini Institute, Rome, Italy, September 17-20, 1950.

desires of scientists from practically every country in the world to work together for the improvement of the health of all peoples and through the friendships engendered at this meeting to spread the gospel of 'Peace on Earth, Good Will Toward Men.'

The Italian Symphony Orchestra provided a musical program during the Inaugural Ceremony.

Committee on Scientific Assembly

Andrew L. Banyai, U.S.A., Chairman
William A. Hudson, U.S.A., Vice-Chairman

Maurizio Ascoli, Italy
Etienne Bernard, France
John F. Briggs, U.S.A.
Giuseppe Carpi, Italy
Umberto Carpi, Italy
Luigi Condorelli, Italy
Gennaro Costantini, Italy
Vincenzo Flci, Italy
Lloyd A. Free, U.S.A.
Cesare Frugoni, Italy
Burgess L. Gordon, U.S.A.
Giovanni L'Eltore, Italy
Lopo de Carvalho, Portugal
Gustav Maurer, Switzerland
Vincenzo Monaldi, Italy
Eugenio Morelli, Italy
Charles R. Morey, U.S.A.
Jay Arthur Myers, U.S.A.
A. Omodel Zorini, Italy
Maurice Rice, U.S.A.
Harold G. Trimble, U.S.A.
Raul F. Vaccarezza, Argentina
Pietro Valdoni, Italy

Scientific Assembly

The Scientific Assembly of the First International Congress on Diseases of the Chest was convened at the Carlo Forlanini Institute, Rome, Italy, at 9:00 a.m. on Monday, September 18, with Professor A. Omodel Zorini, Rome, Governor of the College for Northern Italy, presiding in Auditorium No. 1 and Professor Maurizio Ascoli, Palermo, Governor of the College for Southern Italy, presiding in Auditorium No. 2.

More than 100 scientific papers were presented during the Congress by physicians from forty-two countries. Every aspect of diseases of the chest was discussed including the latest advancement in the use of antibiotic and chemotherapy treatment of various chest conditions. The medical and surgical aspects of pulmonary and cardiac chest disease were presented by the leading authorities in the world at the Congress. Some of the papers are published in this issue of the journal and other papers read at the Congress will be published in future issues of "Diseases of the Chest."

Motion Pictures

Interesting motion pictures from many countries were presented in a special theatre during the Congress. These motion pictures dealt with many aspects of diseases of the chest.



Scientific Assembly, First International Congress on Diseases of the Chest,
Carlo Forlanini Institute, Rome, Italy, September 17-20, 1950.

Exhibits

There was a large display of interesting exhibits. One of the outstanding exhibits was a panoramic view in miniature of the Carlo Forlanini Institute, built by the patients. The Carlo Forlanini Institute is one of the largest and finest constructed institutions in the world. The pathological museum housed in the Institute is renowned throughout the world. Of tremendous interest to the delegates was the exhibit concerned with the epidemiologic study of the mortality of tuberculosis in the world. This splendid exhibit was prepared by Professor Giovanni L'Eltore, Vice-Director of the Carlo Forlanini Institute and presented on large charts in color. A special art exhibit by the patients in the institution attracted much attention. The Technical Exhibits were representative of the leading pharmaceutical laboratories and manufacturers of surgical instruments and equipment from many countries.

Committee on Exhibits

Giovanni L'Eltore, Italy, Chairman
Marcello Cancellario, Italy
Renato Lupi, Italy
Mary Tyler, U.S.A.

Council on International Affairs

Chevalier L. Jackson, Philadelphia, Pennsylvania, Chairman
Andrew L. Banyai, Milwaukee, Wisconsin
Seymour M. Farber, San Francisco, California
Edgar Mayer, New York, New York
Richard H. Overholt, Brookline, Massachusetts

Council on Pan American Affairs

Richard H. Overholt, Brookline, Massachusetts, Chairman
Raul F. Vaccarezza, Buenos Aires, Argentina, Vice-Chairman
J. R. Herradora, Jersey City, New Jersey, Secretary
Donato G. Alarcon, Mexico City, Mexico
Gustavo Aldereguia, Havana, Cuba
Jose Antezana Estrada, La Paz, Bolivia
Carlos Arboleda Diaz, Bogota, Colombia
Jose Ignacio Baldo, Caracas, Venezuela
Raul Blanco Cervantes, San Jose, Costa Rica
Juan Matz Boettner, Asuncion, Paraguay
Marcio Bueno, Fall River, Massachusetts
E. Coronado Iturbide, Guatemala City, Guatemala
I. Costio Villegas, Mexico City, Mexico
J. A. Couillard, Quebec, Canada
Edgar W. Davis, Washington, D. C.
James S. Edlin, New York, New York
Leo Eloesser, San Francisco, California
Reginaldo Fernandes, Rio de Janeiro, Brazil
Ovidio Garcia Rosell, Lima, Peru
Fernando D. Gomez, Montevideo, Uruguay
Jorge A. Higgins, Guayaquil, Ecuador
Affonso MacDowell, Rio de Janeiro, Brazil
Amadeo V. Mastellari, Panama City, Panama
J. M. Moscoso Cordero, Trujillo, Dominican Republic
Antonio Navarrete, Havana, Cuba
H. Orrego Puelma, Santiago, Chile
Arthur Q. Penta, Schenectady, New York
Jaime F. Pou, Hato Rey, Puerto Rico

Octavio Rivero, Havana Cuba
Louis Roy, Port-au-Prince, Haiti
Juan Tanca Marengo, Guayaquil, Ecuador
Gumersindo Sayago, Cordoba, Argentina
Jose Silveira, Salvador, Brazil
Henry C. Sweany, Jacksonville, Florida
Gilberto Zamorano, Valparaiso, Chile

Council on European Affairs

Andrew L. Banyai, Milwaukee, Wisconsin, Chairman
Gustav Maurer, Davos, Switzerland, Vice-Chairman
Richard R. Trail, London, England, Secretary

Etienne Bernard, Paris, France
William Bronkhorst, Utrecht, The Netherlands
Lucien Brull, Liege, Belgium
Ronald V. Christie, London, England
Antonio Crespo Alvarez, Madrid, Spain
Henri Durieu, Brussels, Belgium
Sir Alexander Fleming, London, England
Eric Hedwall, Uppsala, Sweden
Joachim Hein, Schleswig-Holstein, Germany
Paul H. Holinger, Chicago, Illinois
Jaroslav Jedlicka, Prague, Czechoslovakia
Robert Y. Keers, Aberdeenshire, Scotland
Erhard F. Kux, Innsbruck, Austria
Jorgen Lehmann, Gothenburg, Sweden
Lopo de Carvalho, Lisbon, Portugal
Luke K. Malley, Dublin, Ireland
Robert T. Neubauer, Belgrade, Yugoslavia
Nicholas Oekonomopoulos, Athens, Greece
William E. Ogden, Toronto, Canada
Frank Pope, New York, New York
Sandor Puder, Budapest, Hungary
Irving Sarot, New York, New York
Anton Sattler, Vienna, Austria
Carl B. Semb, Oslo, Norway
Paul Veran, Nantes, France
Attilio Omodei Zorini, Rome, Italy

Council on Pan Pacific Affairs

Seymour M. Farber, San Francisco, California, Chairman
Miguel Canizares, Manila, Philippine Islands, Vice-Chairman
Forrest J. Pinkerton, Honolulu, Hawaii, Secretary

Chen Chao-Chang, Shanghai, China
Darcy R. W. Cowan, Adelaide, Australia
R. M. DeLambert, Wellington, New Zealand
Leo Eloesser, San Francisco, California
John B. Ferguson, Melbourne, Australia
Fortunato S. Guerrero, Quezon City, Philippine Islands
W. Elliott Harrison, Vancouver, B. C., Canada
W. Cotter Harvey, Sydney, Australia
In Sung Kwak, Seoul, Korea
William F. Leslie, Hilo, Hawaii
Li Shu Fan, Hong Kong, China
J. Ancheng Miao, Kunming, China
James E. O'Malley, Anchorage, Alaska
Jo Ono, Tokyo, Japan
Lincoln Pan, Shaoshing, China
Alan H. Penington, Melbourne, Australia
Manuel Quisumbing, Sr., San Pablo, Philippine Islands
Martin J. Seid, San Francisco, California
Richard K. Start, Nagano Ken, Japan
Hastings D. Walker, Honolulu, Hawaii

Council on African and Eastern Affairs

Edgar Mayer, New York, New York, Chairman
 Moses J. Stone, Boston, Massachusetts, Vice-Chairman
 Basil A. Dormer, Durban, South Africa, Secretary
 Reeves H. Betts, Vellore, India
 John A. Cremer, Addis Ababa, Ethiopia
 Zohora Ismail, New York, New York
 Prag Nath Kapur, Bombay, India
 P. J. Kloppers, Pretoria, South Africa
 David P. Marais, Cape Town, South Africa
 Papken Mugrditchian, Beirut, Lebanon
 Charles K. Nucho, Beirut, Lebanon
 Juda M. Pauzner, Petach Tikva, Israel
 Ishan Rifat Sabar, Istanbul, Turkey
 Tevfik Saglam, Istanbul, Turkey
 Abdel-Aziz Sami, Cairo, Egypt
 Theodore Schrire, Cape Town, South Africa
 Raman Viswanathan, New Delhi, India

MEMBERSHIP*By Council Jurisdiction***American College of Chest Physicians**

Council on Pan American Affairs	(2,906)	Hungary	3
Argentina	115	Ireland	5
Bolivia	7	Italy	89
Brazil	119	Northern Ireland	1
Canada	140	Norway	3
Canal Zone	1	Portugal	32
Chile	56	Scotland	4
Colombia	32	Spain	13
Costa Rica	7	Sweden	7
Cuba	47	Switzerland	9
Dominican Republic	2	Yugoslavia	1
Ecuador	11		
El Salvador	6	Council on Pan Pacific Affairs	(130)
Guatemala	7	Alaska	3
Haiti	4	American Samoa	1
Jamaica	1	Australia	34
Mexico	61	Ceylon	1
Nicaragua	1	China	16
Panama	11	Hawaii	13
Paraguay	5	Japan	5
Peru	24	Korea	2
Puerto Rico	47	Philippines	54
Trinidad	1	Thailand	1
Uruguay	29		
U.S.A.	2148	Council on African and Eastern Affairs	(110)
Venezuela	24	Belgian Congo	1
		Egypt	2
Council on European Affairs	(296)	Ethiopia	1
Austria	2	India	33
Belgium	30	Iran	1
Canary Islands	1	Iraq	2
Czechoslovakia	1	Israel	23
England	30	Lebanon	7
Finland	1	Morocco	1
France	38	Pakistan	1
Germany	8	South Africa	31
Greece	15	Syria	1
Holland	3	Transjordan	1
		Turkey	5

MEMBERSHIP

American College of Chest Physicians

Alaska	3	Iraq	2
American Samoa	1	Ireland	5
Argentine	115	Israel	23
Australia	34	Italy	89
Austria	2	Jamaica	1
Belgian Congo	1	Japan	5
Belgium	30	Korea	2
Bolivia	7	Lebanon	7
Brazil	119	Mexico	61
Canada	140	Morocco	1
Canal Zone	1	Nicaragua	1
Canary Island	1	Northern Ireland	1
Ceylon	1	Norway	3
Chile	56	Pakistan	1
China	16	Panama	11
Colombia	32	Paraguay	5
Costa Rica	7	Peru	24
Cuba	47	Philippines	54
Czechoslovakia	1	Puerto Rico	47
Dominican Republic	2	Portugal	32
Ecuador	11	Scotland	4
Egypt	2	South Africa	31
El Salvador	6	Spain	13
England	30	Sweden	7
Ethiopia	1	Switzerland	9
Finland	1	Syria	1
France	38	Thailand	1
Germany	8	Transjordan	1
Greece	15	Trinidad	1
Guatemala	7	Turkey	5
Haiti	4	Uruguay	29
Hawaii	13	U.S.A.	2148
Holland	3	Venezuela	24
Hungary	3	Yugoslavia	1
India	33		
Iran	1		
		TOTAL	3442

Opening Executive Session

The opening Executive Session of the Congress was held on Saturday afternoon, September 16 at the headquarters of the Italian Federation for the Control of Tuberculosis in Rome.

Dr. Chevalier L. Jackson, U.S.A., Chairman of the Council on International Affairs of the College, presided at the session. The following is an agenda of the opening Executive Session:

- 1) Introduction of Regents of the College.
- 2) Introduction of Governors of the College.
- 3) Seating of the Soviet delegates: Professor Pavel Lukomski and Fedor Uglov, Moscow.
- 4) Report of the Committee on General Arrangements of the Congress: Professor A. Omodel Zorini, Rome.
- 5) Report of the Committee on Scientific Program: Dr. Andrew L. Banya, U.S.A.
- 6) Reports from Regents and Governors representing the following countries were received:

Argentine	Israel
Austria	Italy
Australia	Lebanon
Belgium	Mexico
Brazil	Norway
Ceylon	Pakistan
Cuba	Peru
Colombia	Philippine Islands
Chile	Portugal
Egypt	South Africa
El Salvador	Spain
France	Sweden
Germany	Switzerland
Great Britain	Turkey
Greece	Venezuela
Holland	Uruguay
India	U.S.A.

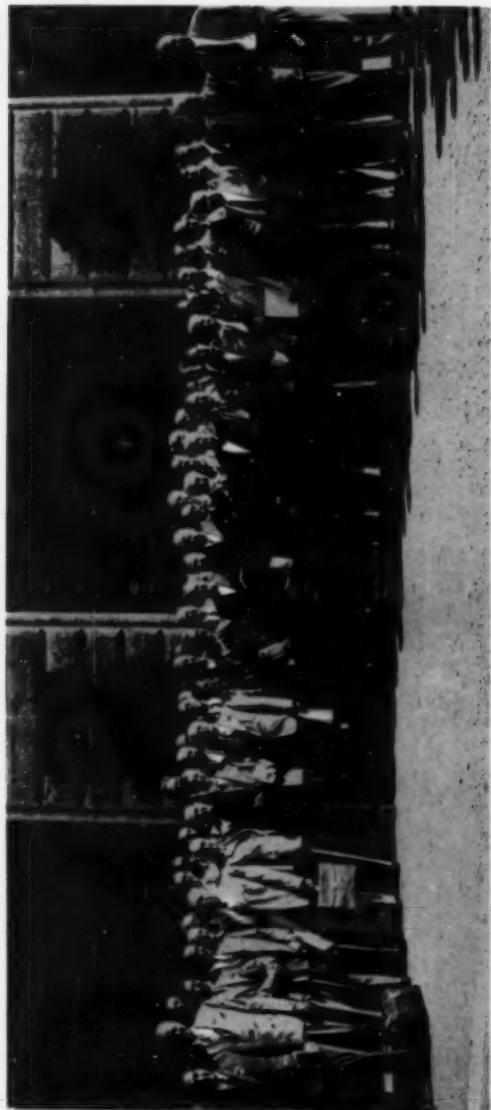
7) Report of the Executive Director: Murray Kornfeld, U.S.A.

- a) Announcement of the Inaugural Ceremony to be held the following morning (Sunday, September 17) at the Palazzo Barberini.
- b) Announcement that the Mayor of Rome would tender a reception to all of the delegates at the Capitolo on Monday evening, September 18 at 10 p. m.
- c) Announcement of a reception by Professor Eugenio Morelli on Tuesday, September 19 for the delegates.
- d) The American Ambassador would hold a reception in honor of the delegates from the United States on Wednesday, Sept. 20.



Delegates signing the College Roster at the Congress

Reading left to right: Louis Mark, U.S.A.; Pavel Lukomski, U.S.S.R.; Sir Alexander Fleming, Great Britain; Murray Kornfeld, U.S.A.; and Eugenio Morelli, Italy.



Delegates attending the closing Executive Session of the Council on International Affairs, First International Congress on Diseases of the Chest, American College of Chest Physicians, Carlo Forlanini Institute, Rome, Italy, September 21, 1950.

- e) Closing Banquet and Grand Ball to be held at the Hotel Excelsior on Thursday evening, September 21.

It was announced that transportation would be provided between the hotels and the Carlo Forlanini Institute. The Italian Government made special buses available for this purpose. Each bus will carry a sign *Reserved for the American College of Chest Physicians*.

It was also announced that private dinners would be given by Professor Zorini and the Italian Federation for the Control of Tuberculosis. Private receptions to be given by the Peruvian Ambassador, French Ambassador and Venezuelan Ambassador.

Closing Executive Session

The closing Executive Session was held on Thursday, September 21, at the Carlo Forlanini Institute. Dr. Chevalier L. Jackson presided at the meeting. An agenda of the session follows:

- 1) Signing of the College Roster.

- 2) Reports of Regents, Governors and Council Members.

The two new Regents of the College in Europe, namely, Sir Alexander Fleming for Great Britain and Professor Eugenio Morelli for Italy were introduced.

- 3) Invitations from delegates for the Second International Congress on Diseases of the Chest.

a) Cuba, presented by Dr. Antonio Navarrete, Havana, Regent of the College for Cuba.

b) Egypt, presented by Dr. Abdel Aziz Sami, Cairo, Governor of the College for Egypt.

c) U.S.A., presented by Dr. Andrew L. Banyai, Milwaukee, Wisconsin, Chairman, Conference of College Chapter Officials.

d) Lebanon, Dr. Mugrditchian, Governor.

Verbal invitations were presented by Dr. Raman Viswanathan, New Delhi, Regent of the College for India; Dr. Carlos Arboleda Diaz, Bogota, Governor of the College for Colombia; and Dr. Julio Criollo Rivas, Caracas, Governor of the College for Venezuela.

A tentative invitation was extended from Brazil and this has since been confirmed in writing by Professor Manoel de Abreu, Rio de Janeiro, President of the International Union Against Tuberculosis.

- 4) Communications from the following delegates of the American College of Surgeons, the International College of Surgeons and the American College of Physicians were received:

Dr. Richard H. Overholt, Brookline, Massachusetts,
American College of Surgeons.

Dr. Chevalier L. Jackson, Philadelphia, Pennsylvania,
International College of Surgeons.

Dr. Edward A. Greco, Portland, Maine,
American College of Physicians.

The following communication from Dr. Greco, representing the American College of Physicians, was read:

"In behalf of the President of the American College of Physicians, General William Middleton, I wish to congratulate the First International Congress on Diseases of the Chest for its eminently successful venture. My itinerary precludes attendance at the closing sessions so I take this opportunity through the kindness of Dr. Louis Mark in extending heartfelt thanks for such an enjoyable seminar and to express the desire that such invaluable gatherings will continue to be held from time to time."

5) Recommendations for the Second International Congress on Diseases of the Chest:

Dr. Raman Viswanathan, Regent of the College for India, recommended that English and French be established as the official languages for all international conferences sponsored by the College. Upon the recommendation of Dr. Antonio Navarrete, Regent of the College for Cuba, it was suggested that Spanish be included as one of the official languages for future international congresses of the College.

Upon the recommendation of Professor Omodei Zorini, Governor of the College for Italy, it was suggested that in addition to the official languages, the country in which the congress is held should have its language included in the official program.

Dr. Alan Penington of Australia, member of the Council on Pan Pacific Affairs of the College, recommended that more time be allocated for discussion.

Dr. John Briggs, St. Paul, Minnesota, Governor of the College for Minnesota, recommended that the program committee give consideration to symposia and round table discussions for the next congress.

Professor Jorgen Lehmann of Sweden, member of the Council on European Affairs of the College, recommended that translations into the official languages be projected simultaneously on a large screen above the heads of the speakers.

Dr. Louis Mark, Columbus, Ohio, President of the College, recommended that consideration be given to the use of earphones for simultaneous translation. It was decided that the World Health Organization be contacted concerning this proposal.

- 6) Organization of the European Chapter of the College was announced with Dr. Andre Meyer of Paris as secretary. It is planned that the first meeting of the European Chapter be held in Paris in 1951. The Regents and Governors of the College in the European countries are to comprise the executive committee.
- 7) A resolution was presented thanking the officials of the College in Italy, the Italian Government and all of the Italian physicians for their assistance in making the congress successful.
- 8) Announcement was made of an invitation received from His Holiness, Pope Pius XII, that he would receive the delegates to the Congress at his summer home in Castel Gandolfo the following afternoon at 4:30.
- 9) It was announced that approximately 1,000 physicians and wives from 42 countries registered for the Congress.

The following 54 delegates from 31 countries registered for the *Closing Executive Session of the Congress*:

Manuel Albertal, Argentine
 Robert J. Anderson, U.S.A.
 Carlos Arboleda Diaz, Colombia
 Maurizio Ascoli, Italy
 Andrew L. Banyai, U.S.A.
 Etienne Bernard, France
 John F. Briggs, U.S.A.
 Miguel Canizares, Philippine Is.
 Julio Criollo Rivas, Venezuela
 Manoel de Abreu, Brazil
 Henri Durieu, Belgium
 James S. Edlin, U.S.A.
 L. Fatti, South Africa
 Alexander Fleming, England
 Ovidio Garcia Rosell, Peru
 Carlos Gonzalez, El Salvador
 Burgess L. Gordon, U.S.A.
 Joachim Hein, Germany
 William A. Hudson, U.S.A.
 S. Ibrahim, Pakistan
 Chevalier L. Jackson, U.S.A.
 Erhard Kux, Austria
 Jorgen Lehmann, Sweden
 Lopo de Carvalho, Portugal
 Pavel Lukomski, U.S.S.R.
 Carlos Maldonado, Chile
 David P. Marais, South Africa
 Louis Mark, U.S.A.

Gustav Maurer, Switzerland
 Edgar Mayer, U.S.A.
 J. B. McDougall, Switzerland
 Andre Meyer, France
 O. Monod, France
 Eugenio Morelli, Italy
 P. S. Mugridditchian, Lebanon
 Jay Arthur Myers, U.S.A.
 P. Nylander, Finland
 Nicholas Oeconomopoulos, Greece
 A. Omodei Zorini, Italy
 Richard H. Overholt, U.S.A.
 Basil Papanicolaou, Greece
 Juda Pauzner, Israel
 J. Winthrop Peabody, U.S.A.
 F. Piechaud, France
 Manuel Quisumbing, Philippine Is.
 George E. Ranawake, Ceylon
 Tevfik Saglam, Turkey
 Abdel Aziz Sami, Egypt
 T. Santy, France
 Armando Sarno, Uruguay
 Moses J. Stone, U.S.A.
 Richard R. Trail, England
 Alvaro Urquiza, Spain
 Raman Viswanathan, India
 —————
 Murray Kornfeld, U.S.A.

President's Banquet

The President's Banquet was held at the Hotel Excelsior, Rome, Italy, on Thursday night, September 21. This formal function was attended by 650 delegates and their wives.

Dr. Louis Mark, U.S.A., President of the American College of Chest Physicians presided and introduced the guest speakers. Addresses were made by Professors Eugenio Morelli, A. Omodei Zorini and Giovanni L'Eltore, Rome, Italy.

The dinner was followed by the convocation at which time certificates were awarded to new Fellows of the College. Special certificates of merit were also awarded to College officials and College keys were presented to Professors Morelli, Zorini and L'Eltore by the president of the College. Dr. Mark was assisted in these ceremonies by Dr. Chevalier L. Jackson, U.S.A., chairman of the Council on International Affairs of the College.

Many dignitaries were introduced at the banquet and the balance of the evening was given over to the Grand Ball.

Committee on Hotels and Transportation

Giovanni L'Eltore, Italy, Chairman
 Umberto Gherlinzoni, Italy
 Carla Doplicher, Italy

Official Interpreters

Anita Lenz
 Daria Olsoufieff
 Dr. Marco Orrego Espinoza
 Dr. Ricardo Rimini
 Valentina Preobrazenski

Social Activities

On Saturday, September 16, a dinner was tendered by Professor A. Omodel Zorini to the Regents, Governors and other College officials. Sunday, September 17 was occupied with the Inaugural Ceremonies during the morning and in the afternoon and evening a tour of Rome was arranged for the delegates. "Rome by Night" is one of the most popular and picturesque tours arranged for visitors to that city.

A reception for the delegates was given by His Honor Salvatore Rebecchini, the Mayor of Rome, on Monday evening, September 18. The reception was held in the beautiful gardens of the "Capitolo" (the old Roman Capitol).

Professor Eugenio Morelli gave a reception for the delegates at his home on Tuesday evening, September 19. The guests were received by Professor Morelli, Mrs. Morelli and their lovely daughter, Milla.

Wednesday night, September 20, was given over to receptions at the various embassies and to other private parties. The delegates from the United States attended a reception given by Ambassador and Mrs. James Clement Dunn at their delightful villa. Many of the other embassies entertained delegates from their respective countries.

On Thursday afternoon, September 21, a reception was given at the Carlo Forlanini Institute by the National Institute of Social Welfare under the presidency of Dr. Angelo Corsi. The Grand Ball and Reception of the Congress was held on Thursday evening at the Hotel Excelsior. This outstanding formal affair was attended by 650 delegates and their wives.

A cocktail party was given on Friday, September 22 by Hon. Vicente Cerro Cebria, Minister from Peru. That evening a dinner presented by the Italian Federation Against Tuberculosis was held under the presidency of Professor Gennaro Costantini.

On Saturday, September 23, a reception was tendered by Hon. Henrique Gel-Fortoul, Ambassador from Venezuela.

During the week tours of the Vatican City and Tivoli were arranged. The Ladies Reception Committee was very active in the arrangements for all of these functions and tours, and the officials of the College wish to express their deep gratitude to the ladies committee for their wonderful cooperation.

Ladies Reception Committee

Mrs. Beatrice Rebecchini, Chairman
Countess Sofia Zanchini di Castiglionchio
Mrs. Bianca Bianchi
Mrs. Amata Canaperia
Mrs. Maria Corsi
Mrs. Maria Grazia Cramarossa
Mrs. Vera Daddi
Mrs. Milla Di Paola
Mrs. Maria Fegiz
Mrs. Dina Francioni
Mrs. Cecilia L'Eltore
Miss Milla Morelli
Mrs. Giovanna Omodel Zorini

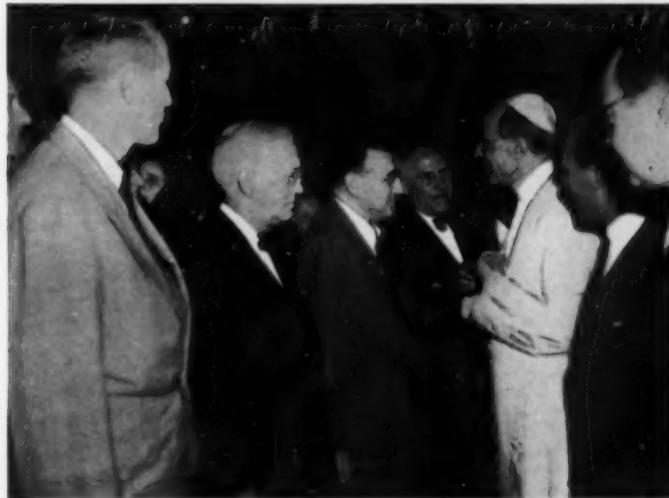
Delegates Received by Pope Pius XII

Approximately 200 delegates attending the Congress were granted a private audience with Pope Pius XII at Castel Gondolfo on September 22. Pope Pius XII, in receiving the delegates stated that "too many tuberculous patients wait too long before seeking medical attention. Nothing is so lamentable as these hesitations, these interminable evasions, by patients and their families before having recourse to your care. They seem to hope that by blinding themselves to the threat or the first symptoms of the disease, they can conjure it or drive it away. In most cases, a stay in a well equipped sanatorium could have saved the delicate child."

Pope Pius further stated: "... To the American College of Chest Physicians, who have sponsored this highly important Congress, we extend our gratitude. We also express our appreciation to the Italian Government and, in particular, to the Hon. Minister of Public Instruction, the Carlo Forlanini Institute, and the High Commissioner of Hygiene and Public Health who in collaboration with the National Institute for Social Welfare and the Italian Federation Against Tuberculosis, have made this auspicious occasion possible."

Special mention by Pope Pius XII was made of the valuable contributions of Sir Alexander Fleming to the benefit of mankind.

In closing, Pope Pius stated: "... Yours, gentlemen, is a devoted, in the sense of a self-consecrated group, who have made the whole world their debtors; and we were indeed happy to accede to the request of your president and take profit of this occasion to assure you of our very sincere interest in your work and its success."



*Delegates being received by His Holiness, Pope Pius XII
at Castel Gondolfo, September 22, 1950.*

Reading left to right: Richard H. Overholt, U.S.A.; Sir Alexander Fleming, Great Britain; Murray Kornfeld, U.S.A.; and Louis Mark, U.S.A.

College News

MEETING OF COLLEGE MEMBERS IN LONDON

Dr. Richard R. Trail, Governor of the College for Greater London, arranged an informal meeting during the visit of Dr. Louis Mark, President of the College, to London. The meeting took place on August 14, 1950 and was attended by the following members: Dr. Richard R. Trail, Dr. Louis Mark, Dr. Beatrice Butterworth, Dr. M. Lotfy Dowidar, Dr. Courtenay Evans, Dr. R. Heller, Dr. James Maxwell, Dr. Paton Philip and Dr. A. Sakula. A photograph taken at the time of the meeting appears below.



PORtUGUESE CHAPTER

The annual meeting of the Portuguese Chapter of the College was held on Saturday, March 3, at the Santo Antonio Hospital, Oporto, under the direction of the Regent, Professor Lopo de Carvalho. A photograph of some of the members of the chapter taken during the meeting is shown. The following program was presented:

Antonio de Araujo, President, presiding.

"Traumatic Hemothorax, Decortication, Recovery,"
Esteves Pinto.

"Four Cases of Non-Tuberculous Spontaneous Pneumothorax,"
Mario Trincao.

"The Influence of Pneumothorax on the Cavities of the Other Lung,"
Lopo Cancella and Lopo de Carvalho, Filho.

"Therapeutic Efficacy of Partial Pneumothorax,"
Jorge Santos.

"Pulmonary Resection in Connection with the Pathogenesis
of Tuberculosis,"
Soares de Oliveira.

"Pulmonary Circulation in Various Pathological Conditions;
Angiopneumographic Investigations,"
Lopo de Carvalho, Carlos Vidal, Lopo Cancella
and Lopo de Carvalho, Filho.

- "Three Clinical Cases,"
Ladislau Patrício.
- "A Case of Ganglioneuroma,"
Antunes de Azevedo.
- "Various Clinical Cases Treated by Thiosemicarbazone,"
Trajano Pinheiro.
- "Febrile Reactions to TB1,"
Pizarro Belleza.
- "Angiography in Experimental Studies of Pulmonary Circulation,"
Aires de Sousa.
- "A Sign of Differential Diagnosis Between Tumors and
Lung Abscesses,"
Lopo de Carvalho, Filho.
- "Thoracoplasties on the Cavities of the Base of the Lungs,"
Jorge Santos and Esteves Pinto.

A luncheon and business meeting was held after the scientific session under the chairmanship of the Governor, Dr. Carlos Vidal. The following officers were elected for the ensuing year:

Ladislau Patrício, Guara, President
Celso Horta, Caramulo, Vice-President
Lopo Cancella, Lisbon, Secretary-Treasurer.

Annual Meeting, Portuguese Chapter, Oporto, March 3, 1951



Front row, reading from left to right: Prof. Esteves Pinto; Dr. Ladislau Patrício, President; Dr. Antonio Araújo; Prof. Lopo de Carvalho, Regent; Dr. Carlos Vidal, Governor; Prof. Vaz Serra; Prof. Mário Trincão. Second row: Dr. Soares Oliveira; Dr. Lopo de Carvalho, Filho; Dr. Pinto Nunes; Dr. Jorge Santos; Dr. Alcibiades Pereira; Dr. Antunes Azevedo; Dr. Justino Giraõ; Dr. Aires de Sousa. Third row: Dr. Armando Pinheiro; Dr. Carlos Gonçalves; Dr. Cid Monteiro; Dr. Lopo Cancella, Secretary-Treasurer; Dr. Julio Vasconcellos; Dr. Mário Cardoso; Dr. José Cabral. Fourth row: Dr. Gago da Silva; Dr. João Lacerda; Dr. Braz Regueiro; Dr. Trajano Pinheiro; Dr. Pizarro Belleza; Dr. Lacerda Pinheiro.

MEXICAN CHAPTER

A meeting of the Mexican Chapter of the College was held at San Luis Potosi during the Fourth National Congress of Tuberculosis and Silicosis, January 21-27. Dr. Burgess Gordon, Philadelphia, Governor of the College for Pennsylvania, addressed the meeting. Other members of the College who were present at the chapter meeting were: Dr. Irving Sarot, New York City; Dr. Charles L. Ianne, San Jose, California; Dr. R. E. Sundberg, San Diego, California; Dr. Leo Eloesser, San Francisco California; Dr. Fernand E. Cardis, Lausanne, Switzerland; and Dr. Jean Mathey, Paris, France. Guests present included Dr. Hurley L. Motley, Philadelphia, Pennsylvania; Dr. Maxwell Chamberlain, New York City; and Dr. Nicasio Cárdenas, Havana, Cuba.

NINTH CONGRESS OF ULAST

The Ninth Congress of the Union of Latin-American Tuberculosis Societies (ULAST) will be held at Guayaquil, Ecuador, July 14-22, 1951, under the presidency of Dr. Jorge A. Higgins, Governor of the American College of Chest Physicians for Ecuador.

The Council on Pan-American Affairs will meet with the Governors and Regents of the College for breakfast at 8:00 a.m. on July 18, 1951. This meeting will be held at the Hotel Humbold (del balneario de Playas), Guayaquil, Ecuador. The Regent of the College for Ecuador is Dr. Juan Tanca Marengo.

Dr. Higgins has extended an invitation to the members of the College to attend this important Congress. For further information write to: Dr. Jorge A. Higgins, Casilla de Correo No. 116, Guayaquil, Ecuador.

Dr. Fernando Gomez, Regent of the College for Uruguay is the secretary of the society.

NEWS NOTES

Professor Basil Papanicolaou, Athens, Governor of the College for Greece, has been appointed by the World Health Organization as Tuberculosis Consultant for a period of one year. Professor Papanicolaou is now in Burma where he is serving as the leader of a team which was formed for the WHO Demonstration and Teaching Tuberculosis Center in Rangoon. He will assist the Burmese Government in setting up a tuberculosis control program.

The following physicians from various countries have served as residents in the Tuberculosis Section of the Fall River General Hospital which is directed by Dr. Marcio M. Bueno: Dr. Ernesto Briones, Superintendent and Medical Director, Alfredo Valenzuela Sanatorium, Guayaquil, Ecuador, Dr. Walter Mendes, sent by Dr. Reginaldo Fernandes, Rio de Janeiro, Governor of the College for Central Brazil, Dr. Asdrubal S. de Carvalho, sent by Professor Lopo de Carvalho, Lisbon, Regent of the College for Portugal, and Dr. Moises Abusabal, sent by Dr. Ovidio Garcia Rosell, Lima, Regent of the College for Peru. Dr. George Villafane, sent by Dr. Gumersindo Sayago, Cordoba, Regent of the College for the Argentine, is now a resident at the hospital.

COLLEGE EVENTS

Semi-Annual Meeting, Board of Regents, American College of Chest Physicians, Houston, Texas, December 2-3, 1951.

Southern Chapter Meeting, Dallas, Texas, November 4-5, 1951.

Chicago Postgraduate Course, September 24-28, 1951.

Minneapolis Postgraduate Course, October 18-20, 1951.

New York City Postgraduate Course, November 12-17, 1951.

SANATORIO SAN ANGEL MEXICO CITY, D. F.



Inaugurated July 14, 1947

A modern Sanatorium, finest equipment, beautiful location. All types of accommodations. Well trained medical & surgical staff. Moderate rates: Dls. 4.50 per day and up.

Institución moderna equipada para el tratamiento médico y quirúrgico de todas las afecciones respiratorias. Cuotas moderadas, desde Dls. 4.50 por día.

Write for information to
DR. DONATO G. ALARCON
Medical Director
Amazonas Núm. 96, México City

Workmen's Circle Sanatorium



The Workmen's Circle Sanatorium, Liberty, New York. A modern thoroughly equipped institution situated in the heart of the Catskills, for treatment of tuberculosis and other diseases of the lungs. Rates are \$45.00 per week inclusive of all charges. For further information write to

SAMUEL LIPSTEIN, M.D.
Supt. and Medical Director

**add
weight**

**provide
energy**

MINIMIZING FERMENTATION

Anticipated effects of glucose to increase weight and provide energy are lost if the patient shows unwillingness to accept it.

When 'Dexin' is given, the common aversion to the sickly, sometimes nauseating, taste of glucose in many of its ordinary forms is noticeably absent.

'Dexin' is so palatable, so refreshing, that neither children nor adults ever need urging to take it as prescribed.

(Contains 75% Dextrin and 25% Maltose)

3-6 tablespoonfuls in milk, fruit juices, or other beverages, three or more times daily.

'Dexin'[®]
brand

HIGH DEXTRIN CARBOHYDRATE

An improved form of
glucose therapy



BURROUGHS WELLCOME & CO. (U.S.A.) INC.
Tuckahoe 7, N.Y.

MEDICAL SERVICE BUREAU

Positions Available

Physician-in-charge of medical care wanted for university hospital. Starting salary \$600 monthly. For further information please address Box 219A, American College of Chest Physicians, 500 N. Dearborn St., Chicago 10, Ill.

Residency in thoracic surgery available for well qualified man at university hospital. Please address Box 220A, American College of Chest Physicians, 500 N. Dearborn St., Chicago 10, Ill.

Resident for 175-bed, fully approved, tuberculosis hospital; salary \$3,000.00 per year, less nominal sum for maintenance; to start June 1, 1951. Please apply to Medical Director, Mahoning Tuberculosis Sanatorium, 4880 Kirk Road, Youngstown 7, Ohio.

Staff physician wanted for 160-bed tuberculosis hospital situated in the Pacific Northwest. Physician should be eligible for Oregon license. Salary \$495 to \$555 with complete maintenance. Full particulars given upon request. Please address all inquiries to Box 221A, American College of Chest Physicians, 500 N. Dearborn St., Chicago 10, Illinois.

Two thoracic surgeons offer attractive position to either a medical or surgical associate. Practice confined to diseases of the chest. Young, well-trained, middle-westerner, or westerner preferred. Board qualification desirable. For further particulars, please address Box 222A, American College of Chest Physicians, 500 N. Dearborn St., Chicago 10, Illinois.

Position Open: Fellowship in diseases of the chest, with emphasis on research on physiologic methods in the study and treatment of chronic non-tuberculous and tuberculous pulmonary disease; also, participation in an investigation of cardiac failure. Fellowship allows sufficient clinical experience to count for National Boards. Salary: \$3600. If candidate has completed 3 years for Boards, salary \$4200.

to \$5000. Write: Alvan L. Barach, M.D., Presbyterian Hospital, 620 West 168th Street, New York, N. Y.

Applications accepted for staff and resident physicians, 235 bed tuberculosis sanatorium, 35 miles from New York City. Active teaching and research program. Part of large teaching hospital and approved for training in pulmonary diseases. Write to Director, Montefiore Hospital, N. Y. 67, N. Y.

Positions Wanted

Especially well trained and qualified tuberculosis specialist, specialty board in internal medicine, sub-specialty tuberculosis since 1934; associated with Forlanini Institute, Rome, many years; 16 years experience in pulmonary tuberculosis and chest diseases; 10 years medical director and superintendent of tuberculosis sanatoria, also chief of tuberculosis control program. Licensed in New York State, 42 years of age, excellent health, immediately available. Would accept responsible position commensurate with qualifications. Please address Box 253B, American College of Chest Physicians, 500 N. Dearborn St., Chicago 10, Illinois.

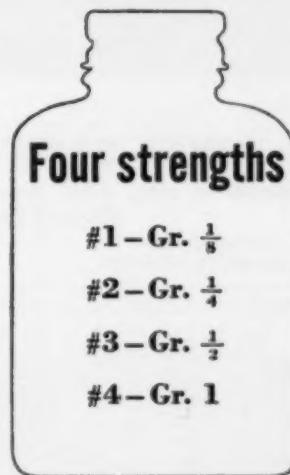
Well trained Chinese thoracic surgeon desires surgical or medical-surgical residency in sanatorium or hospital for chest diseases. Graduate of Grade A medical school in China, 1943. Fellow ACCP. Wife trained in nursing and as laboratory technician. For further information please address Box 254B, American College of Chest Physicians, 500 N. Dearborn St., Chicago 10, Illinois.

Thoracic surgeon, 36 years of age, with considerable experience in surgical treatment of tuberculosis, qualified for boards in thoracic and general surgery, now engaged in private practice, desires position doing thoracic surgery with or without general surgery. In draft classification IV. Will accept group, associate, or sanatorium position. Please write Box 251B, American College of Chest Physicians, 500 N. Dearborn St., Chicago 10, Illinois.

For Pain

'TABLOID'

'EMPIRIN' COMPOUND®
CODEINE PHOSPHATE*



*12 times more soluble
than sulfate!



BURROUGHS WELLCOME & CO. (U.S.A.) INC.
TUCKAHOE 7, N.Y.



ALUM ROCK SANATORIUM

SAN JOSE, CALIFORNIA

TELEPHONE CLAYBURN 8-4921

A Non-profit sanatorium for the treatment of tuberculosis
and other diseases of the chest.

Medical Director

Buford H. Wardrip, M.D.
Telephone Clayburn 8-4921

Associate Medical Director

C. Gerald Scarborough, M.D.

Harold Gayon Trimble, M.D., Oakland
Cabot Brown, M.D., San Francisco
J. Lloyd Eaton, M.D., Oakland
H. Corwin Hinshaw, M.D., San Francisco
Gerald L. Crenshaw, M.D., Oakland
Glenroy N. Pierce, M.D., San Francisco
Ina Gourley, M.D., Oakland
James Robert Wood, M.D., Oakland
W. Dale Peterson, M.D., Oakland

Consulting Pathologist

E. Gwyn Roberts, M.D., San Francisco



100 Beds for Crippled Children

200 Beds for Tuberculosis

ST. JOHNS SANITARIUM, Springfield, Ill.

Complete in every detail. Rates low—because of the services of the
Hospital Sisters of St. Francis.

Medical Director

DR. ROBERT E. CAMPBELL

Address

SISTER THEODINE, R.N., Sup't



Cragmor Sanatorium

For the treatment of tuberculosis and
diseases of the chest, situated near
Colorado Springs in the heart of the
Rockies. Ideal year-round climate.
Individual apartments, with or without
baths. Rates on request.

For detailed information address

Henry W. Maly, M.D., Director
Cragmor Sanatorium
Colorado Springs, Colorado



Unsurpassed year-round climate
Near but not upon the desert
Altitude 2350 feet

Southern Sierras Sanatorium For Chest Diseases

BANNING, CALIFORNIA

90 miles east of Los Angeles on
Highways 99, 60 and 70

Quiet contentment

Absence of hospital atmosphere
Sustained reputation for satisfaction

C. E. ATKINSON, M.D., Medical Director

SOUTHWESTERN PRESBYTERIAN SANATORIUM

ALBUQUERQUE,
NEW MEXICO



A well-equipped Sanatorium in the Heart of the
Well Country.

Write for Information and Rates

MARYKNOLL SANATORIUM

MONROVIA, CALIFORNIA

(MARYKNOLL SISTERS)



A sanatorium for the treatment of tuberculosis and other diseases of the lungs. Located in the foothills of the Sierra Madre Mountains. Southern exposure. Accommodations are private, modern and comfortable. General care of patient is conducive to mental and physical well being.

SISTER MARY PIETA, R.N.
Superintendent

E. W. HAYES, M.D.
Medical Director

SANATORIUM DIRECTORY

The sanatoria listed in this section are among the finest sanatoria in the United States. They are prepared to offer private, individual, specialized care to your patients.

For listings in the SANATORIUM DIRECTORY write to the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois

ALUM ROCK SANATORIUM
San Jose, California

CALIFORNIA SANATORIUM
Belmont, California

CRAGMORE SANATORIUM
Colorado Springs, Colorado

EUDOWOOD SANATORIUM
Towson, Maryland

MARYKNOLL SANATORIUM
Monrovia, California

PALMER SANATORIUM
Springfield, Illinois

ROCKY GLEN SANATORIUM
McConnelsville, Ohio

SCHATZALP SANATORIUM DAVOS
Davos, Switzerland

ST. JOHNS SANITARIUM
Springfield, Illinois

SOUTHERN SIERRAS SANATORIUM
Banning, California

**SOUTHWESTERN PRESBYTERIAN
SANATORIUM**
Albuquerque, New Mexico

**THE SAMUEL AND NETTIE BOWNE
HOSPITAL**

Poughkeepsie, New York
*Immobilizing Lung Chamber Therapy
and Other Modern Methods of Treatment*

SANATORIO ALBERTAL
Buenos Aires, Argentina

SANATORIO SAN ANGEL
Mexico City, Mexico

SWEDISH NATIONAL SANATORIUM
Englewood (Denver) Colorado
Modern Equipment — Moderate Prices

WORKMEN'S CIRCLE SANATORIUM
Liberty, New York

NOTICE TO SUBSCRIBERS

DISEASES OF THE CHEST IS NOW PUBLISHED MONTHLY

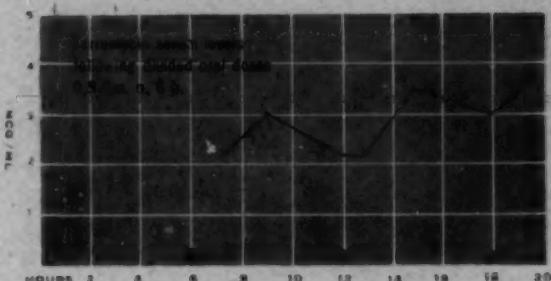
NEW SUBSCRIPTION RATES FOR TWELVE (12) ISSUES

United States of America	\$8.50 per year
All other countries	\$9.50 per year
Back issues	\$1.00 per copy
Special issues (December, 1949)	\$2.00 per copy

Jay Arthur Myers, M.D., F.C.C.P., Chairman, Editorial Board.

in the selection of an antibiotic for surgical infections

rapid contact
between pathogen
and antibiotic
may be a decisive
factor



Adapted from Welch, H.: Ann. New York Acad. Sc., 53:253 (Sept. 15) 1950.

Terramycin^{CRYSTALLINE HYDROCHLORIDE}



Rapid absorption and distribution following oral administration of Terramycin assures therapeutic serum and tissue levels quickly achieved to halt invasive or spreading infection. Continuous effective levels can be maintained through the administration of 0.5 Gm. q. 6 h. as shown in the accompanying chart.¹

Terramycin, employed either alone or as an adjunct to surgical procedures, has proved highly satisfactory in the treatment of a wide range of surgical septic conditions such as cellulitis, cellulitis with abscess, infected laceration, human bite infection, furunculosis, carbuncles, abscess, cervical actinomycosis, gas gangrene, and acute hemolytic streptococcal osteomyelitis.^{2,3,4}

Crystalline Terramycin Hydrochloride is available as *Capsules, Elixir* (formerly *Terrabon*), *Intravenous, Ophthalmic Ointment* and *Ophthalmic Solution*.

1. Welch, H.: Ann. New York Acad. Sc., 53:253 (Sept. 15) 1950. 2. King, E. Q.; Lewis, C. N.; Welch, H.; Clark, E. A., Jr.; Johnson, J. B.; Lyons, J. B.; Scott, R. B., and Conroy, P. B.: J. A. M. A., 143:1 (May 6) 1950. 3. Paluszki, E. J.: Ann. New York Acad. Sc., 53:347 (Sept. 15) 1950. 4. Herrell, W. E.; Holloman, F. R., and Wellman, W. E.: Ann. New York Acad. Sc., 53:427 (Sept. 15) 1950.

Antibiotic Division



CHAS. PFIZER & CO., INC., Brooklyn 6, N. Y.



PINCER ATTACK

Today, treatment of the tubercular patient of strep and PAS is no longer "on trial" . . . it is chemotherapy of choice wherever the disease appears.

Since the early days of para-aminosalicylic acid, Panray's exclusive brand of PAS, has enjoyed the confidence of the medical profession. Our ceaseless research have meant purer, less toxic forms of PAS, as well as a comprehensive assortment of products.

PARASAL costs less today than ever before. For literature on Panray anti-tuberculosis agents, write:

*TEMPEL, C. W., FREDERIC, J. H., JR.,
MARDIS, R. C., TOWBIN, M. N., and
DYE, W. E. Combined intermittent regimens employing streptomycin and PAS.
Am. Rev. Tuberc., 1951, 63, 295.



PARASAL
Acid and Sodium Salt

POWDER

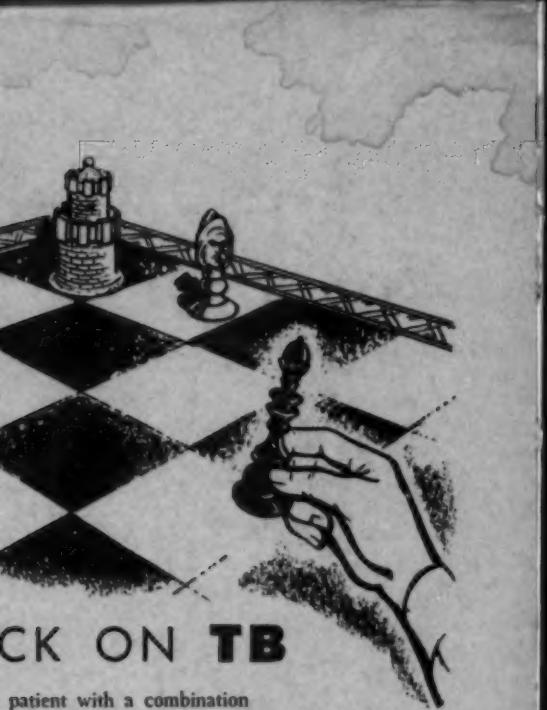
TABLETS, coated
and uncoated

EFFERVESCENT TABLETS

SIRUP

STERILE SOLUTIONS

THE **Panray** COMPANY
340 CANAL ST., NEW YORK 13, N.Y.



CHECK ON TB

patient with a combination
it is the
drugs are available.*

aminosalicylic acid, "PARASAL,"
enjoyed the unqualified
assession. Panray's rigid controls and
toxic preparations
of convenient dosage forms.

er before. Write for prices and
agents.



Greetings
... ACCP ...
from the Panray Corp.
Clara Garay
Myron Pantzer
Milton Feier

R.
P.
L.Y.

DISEASES OF THE

AUTHOR INDEX

Volume XX, July - December

- Adams, Herbert D., Carlton R. Souders
Aortic Deformity Simulating Mediastinal
Form of Coarctation
- Albert, Salomon. A Simple Method for Local
in Anesthesia for Lung Surgery
- Alexander, Hyman. See Belgorod, Samuel H.
Interesting Cardiovascular Abnormalities
Chest Roentgen Surveys
- Andrews, Neil C., Douglas R. Morton, George
Klassen. Oleothorax Following Pulmonary
by Donald L. Paulson
- Auerbach, Oscar and Harry L. Katz. Diffusion
the Lungs
- Bailey, Charles P., Robert P. Glover and
Surgery of Valvular Heart Disease
- Bailey, Frederick N. and B. H. Sullivan, Jr.
- Barach, Alvan L., Chesmore Eastlake, Jr. and
Results and Physiological Effects of Intra-
Therapy in Chronic Pulmonary Tuberculosis
Bellis
- Bassin, Sydney, James S. Edlin and Alfred
Tuberculosis Patient in the General Hospital
- Beatty, Arch J. See Ottosen, Poul et al.
- Beck, Gustav J., Alvan L. Barach and Chester
Results and Physiological Effects of Intra-
Therapy in Chronic Pulmonary Tuberculosis
Bellis
- Belgorod, Samuel H., Hyman Alexander,
McGaley. Tibione in the Treatment of Tuber-
age and Toxic Manifestations
- Belknap, Elston L. Acute Pulmonary Oedema
ogenous Causes, with Therapy
- Benioff, Mortimer A. See Farber, Seymour
- Blair, Emil and John L. Elliott. Artificial
Treatment of Pulmonary Tuberculosis
- Bortone, Frank. Pulmonary Decortication
- Botelho, Gabriel M., Alberto Chapchap,
Osvaldo V. Cordeiro. Pneumonectomy
tuberculosis in Children
- Briggs, John F. Suggestions for the Diagnosis
with an Abnormal X-ray Shadow of Reversible
Forms of Heart Disease. Diagnosis

THE CHEST

INDEX

December, 1951

<i>ers and Carl M. Pearson. An Intestinal Tumor: A Subclinical</i>	35
<i>Differential Block-Inflation</i>	304
<i>el H. et al.</i>	1
<i>malities Discovered on Mass</i>	167
<i>George M. Curtis and Karl P.monary Resection. Discussion</i>	501
<i>iffuse Interstitial Fibrosis of</i>	366
<i>and Thomas J. E. O'Neill. The</i>	453
<i>, Jr. Amebic Lung Abscess</i>	84
<i>. and Gustav J. Beck. Clinical Immobilizing Lung Chamber</i>	
<i>erculosis. Discussion by G. I.</i>	148
<i>Fred A. Richman. The Tuber-</i>	
<i>ital</i>	551
	420
<i>chesmore Eastlake, Jr. Clinical Immobilizing Lung Chamber</i>	
<i>erculosis. Discussion by G. I.</i>	148
<i>r, Charles E. Meidt and John of Tuberculosis Activity, Dos-</i>	1
<i>edema, Endogenous and Exo-</i>	630
<i>our M. et al.</i>	237
<i>al Pneumoperitoneum in the</i>	
<i>sis</i>	520
<i>on</i>	97
<i>, Horacio L. G. Pereira and</i>	
<i>y in the Treatment of Tuber-</i>	
<i>642</i>	
<i>diagnostic Study of a Patient</i>	
<i>of the Chest</i>	24
<i>Discussion by Arlie R. Barnes</i>	482

- Brock, Benjamin L. and Helen M. Ketchum. The Antibacterial Action of Citrus Peel Oil on the Tubercl Bacillus in Vitro 671
- Brown, A. Lincoln and Orrin Cook. Cardio-Respiratory Studies in Pre and Post Operative Funnel Chest (Pectus Excavatum) 378
- Buchberg, Abraham, Ruth Lubliner and Eli H. Rubin. Carcinoma of the Lung: Duration of Life of Individuals Not Treated Surgically. Discussions by R. H. Adams, Alfred Goldman and F. M. Feldmann 257
- Buckingham, William W. See Ottosen, Poul et al. 420
- Chapchap, Alberto. See Botelho, Gabriel M. et al. 642
- Chapman, John S., Alan E. Lindsay and Wayne H. Gossard. Treatment of Unusual Pulmonary Amebic Abscess with Chloroquine 533
- Cook, Orrin and A. Lincoln Brown. Cardio-Respiratory Studies in Pre and Post Poperative Funnel Chest (Pectus Excavatum) 378
- Cordeiro, Osvaldo V. See Botelho, Gabriel M. et al. 642
- Crittenden, J. W. and C. F. Storey. Double Aortic Arch 611
- Curtis, George M. See Andrews, Neil C. et al. 501
- Dormer, B. A., Elizabeth Greathead, Gordon Pirrie, P. Smit, T. Randall and M. van Rensburg. Postural Rest in Pulmonary Tuberculosis 407
- Eastlake, Chesmore, Jr., Alvan L. Barach and Gustav J. Beck. Clinical Results and Physiological Effects of Immobilizing Lung Chamber Therapy in Chronic Pulmonary Tuberculosis. Discussion by G. I. Bellis 148
- Edlin, James S., Sydney Bassin and Alfred A. Richman. The Tuberculosis Patient in the General Hospital 551
- Elliott, John L. and Emil Blair. Artificial Pneumoperitoneum in the Treatment of Pulmonary Tuberculosis 520
- Epstein, Issac. Spontaneous Pneumothorax Due to Diaphragmatic Defect Complicating Pneumoperitoneum Therapy 327
- Espen, Lloyd W. See Farber, Seymour M. et al. 237
- Farber, Seymour M., Allen K. McGrath, Jr., Mortimer A. Benioff and Lloyd W. Espen. The Early Diagnosis of Primary Lung Cancer by Cytologic Methods 237
- Felsenfeld, Oscar, Italo F. Volini and Elmer R. Kadison. New Antibiotics in the Treatment of Tuberculosis 19
- Froman, Abel. The Use of Streptomycin in Tuberculosis and Pregnancy. Case Report 539
- Gainer, Joseph H. and Alfred G. Karlson. The Influence of Cortisone on Experimental Tuberculosis of Guinea Pigs 469
- Gillem, Norbert P. See Harden, K. Albert et al. 392
- Glover, Robert P., Charles P. Bailey and Thomas J. E. O'Neill. The Surgery of Valvular Heart Disease 453
- Goorwitch, Joseph. Chondromyxoid Fibroma of Rib 186
- Late Complications of Extrapleural Pneumonolysis with Plombage 651

<i>Gossard, Wayne H., Alan E. Lindsay and John S. Chapman.</i> Treatment of Unusual Pulmonary Amebic Abscess with Chloroquine	533
<i>Grant, Irene.</i> What Should Occupational Therapy be in a Tuberculosis Setting	210
<i>Greathead, Elizabeth.</i> See Dormer, B. A. et al.	407
<i>Greer, William E. R. and Moses J. Stone.</i> Acute Generalized Hemogenous Tuberculosis (Miliary) Followed by Tuberculous Meningitis	194
<i>Grow, John B.</i> See Levine, Samuel et al.	126
See Hurst, Allan et al.	134
<i>Harden, K. Albert, Howard M. Payne, Herbert V. McKnight and Norbert P. Gillem.</i> Streptomycin as an Adjunct to the Therapy of Pulmonary Tuberculosis	392
<i>Herschfus, J. Aaron and Maurice S. Segal.</i> Intravenous ACTH Therapy in the Treatment of Bronchial Asthma	575
<i>Hiltz, J. E., D. M. MacRae and J. J. Quinlan.</i> Tuberculous Tracheobronchitis	313
<i>Holzberger, Philip C., Donald Steinberg and George Schwartz.</i> False Positive Bacteriological Reports in Diseases Simulating Pulmonary Tuberculosis	277
<i>Hurst, Allan.</i> See Levine, Samuel et al.	126
<i>Hurst, Allan, John B. Grow, Samuel Levine and Harold M. Perlmutter.</i> The Use of Plastic Sponge in the Surgical Treatment of Pulmonary Tuberculosis	134
<i>Jackson, Chevaller.</i> Bronchial Adenoma: Follow-up Report After 35 Years	347
<i>Jackson, Chevaller L. and Charles M. Norris.</i> The Role of Bronchoscopy in the Diagnosis and Treatment of Bronchial Adenoma. Discussion by Paul H. Holinger	353
<i>Jacobs, Sydney.</i> Tuberculosis in General Hospitals. Need for a Control Program	545
<i>Janes, R. M. and H. E. Pugsley.</i> Arteriovenous Aneurysm of the Lung	177
<i>Kadison, Elmer R., Italo F. Volini and Oscar Felsenfeld.</i> New Antibiotics in the Treatment of Tuberculosis	19
<i>Karlson, Alfred G. and Joseph H. Gainer.</i> The Influence of Cortisone on Experimental Tuberculosis of Guinea Pigs	469
<i>Katz, Harry L. and Oscar Auerbach.</i> Diffuse Interstitial Fibrosis of the Lungs	366
<i>Ketchum, Helen M. and Benjamin L. Brock.</i> The Antibacterial Action of Citrus Peel Oil on the Tubercl Bacillus in Vitro	671
<i>Klassen, Karl P.</i> See Andrews, Neil C. et al.	501
<i>Kuz, E.</i> The Endoscopic Approach to the Vegetative Nervous System and Its Therapeutic Possibilities	139
<i>Levine, Samuel, John B. Grow, Allan Hurst and Harold M. Perlmutter.</i> An Experimental Study of Plastic Synthetics in Thoracic Surgery	126

The Use of Plastic Sponge in the Surgical Treatment of Pulmonary Tuberculosis	134
<i>Lichtenstein, M. R.</i> Local Thiosemicarbazone Therapy in Tuberculous Empyema	668
<i>Lindsay, Alan E., Wayne H. Gossard and John S. Chapman.</i> Treatment of Unusual Pulmonary Amebic Abscess with Chloroquine	533
<i>Lubliner, Ruth, Abraham Buchberg and Eli H. Rubin.</i> Carcinoma of the Lung: Duration of Life of Individuals not Treated Surgically. Discussions by Ralph H. Adams, Alfred Goldman and F. M. Feldmann	257
<i>MacMillan, John M.</i> Familial Pulmonary Fibrosis	426
<i>MacRae, D. M., J. E. Hiltz and J. J. Quinlan.</i> Tuberculous Tracheobronchitis	313
<i>McGaley, John.</i> See Belgorod, Samuel H. et al.	1
<i>McGrath, Allen K., Jr.</i> See Farber, Seymour M. et al.	237
<i>McKnight, Herbert V., K. A. Harden, H. M. Payne and N. P. Gillem.</i> Streptomycin as an Adjunct to the Therapy of Pulmonary Tuberculosis	392
<i>Meidt, Charles E.</i> See Belgorod, Samuel H. et al.	1
<i>Morton, Douglas R.</i> See Andrews, Neil C. et al.	501
<i>Myers, J. A.</i> Editorials	333, 564
<i>Nady, Andrew and L. L. Titche.</i> Further Studies on the Control of Vestibular Toxic Effects of Streptomycin by Dramamine	324
<i>Neff, Robert E.</i> The Practical Use of an Isolation Ward in a General Hospital for the Treatment of Tuberculosis	557
<i>Norris, Charles M. and Chevalier L. Jackson.</i> The Role of Bronchoscopy in the Diagnosis and Treatment of Bronchial Adenoma. Discussion by Paul H. Holinger	353
<i>O'Neill, Thomas J. E., Charles P. Bailey and Robert P. Glover.</i> The Surgery of Valvular Heart Disease	453
<i>Ottosen, Poul, Carol Popp, Arch J. Beatty and William W. Buckingham.</i> The Treatment of Giant Tuberculous Cavities	420
<i>Overholt, Richard H.</i> The Value of Exploration in Silent Lung Disease	111
<i>Payne, Howard M.</i> See Harden, K. Albert et al.	392
<i>Pearson, Carl M., Carlton R. Souders and Herbert D. Adams.</i> An Aortic Deformity Simulating Mediastinal Tumor: A Subclinical Form of Coarctation	35
<i>Perlmutter, Harold M.</i> See Levine, Samuel et al. See Hurst, Allan et al.	126 134
<i>Pereira, Horacio L. G.</i> See Botelho, Gabriel M. et al.	642
<i>Pirie, Gordon.</i> See Dormer, B. A. et al.	407
<i>Popp, Carol.</i> See Ottosen, Poul et al.	420
<i>Poppe, J. K.</i> Bronchiogenic Carcinoma Masquerading as Other Diseases. Discussion by Ephraim Korol	75

Pugsley, H. E. and R. M. Janes. Arteriovenous Aneurysm of the Lung	177
Quinlan, J. J., J. E. Hiltz and D. M. MacRae. Tuberculous Tracheo-bronchitis	313
Randall, T. See Dormer, B. A. et al.	407
Richman, Alfred A., James S. Edlin and Sydney Bassin. The Tuberculosis Patient in the General Hospital	551
Rubin, Eli H., Abraham Buchberg and Ruth Lubliner. Carcinoma of the Lung: Duration of Life of Individuals Not Treated Surgically. Discussions by Ralph H. Adams, Alfred Goldman and F. M. Feldmann	257
Ryan, Joe M. and Henry A. Zimmerman. Cor Pulmonale: A Report of an Additional 52 Cases Compared with a Previous Study of 50 Cases	286
Saglam, Tevfik. Medical Treatment of Abscess of the Lungs. Discussion by Lee Ogden	437
Schwartz, George, Donald Steinberg and Philip C. Holzberger. False Positive Bacteriological Reports in Diseases Simulating Pulmonary Tuberculosis	277
Segal, Maurice S. and J. Aaron Herschfus. Intravenous ACTH Therapy in the Treatment of Bronchial Asthma	575
Smit, P. See Dormer, B. A. et al.	407
Souders, Carlton R., Carl M. Pearson and Herbert D. Adams. An Aortic Deformity Simulating Mediastinal Tumor: A Subclinical Form of Coarctation	35
Steinberg, Donald, Philip C. Holzberger and George Schwartz. False Positive Bacteriological Reports in Diseases Simulating Pulmonary Tuberculosis	277
Stone, Moses J. and William E. R. Greer. Acute Generalized Hemogenous Tuberculosis (Miliary) Followed by Tuberculous Meningitis	194
Storey, C. F. and J. W. Crittendon. Double Aortic Arch	611
Sullivan, B. H., Jr., and Frederick N. Bailey. Amebic Lung Abscess	84
Thompson, Samuel Alcott. A Surgical Rehabilitation for the Coronary Cripple	204
Thorek, Philip. Diagnosis and Treatment of Carcinoma of the Esophagus	290
Titche, L. L. and Andrew Nady. Further Studies on the Control of Vestibular Toxic Effects of Streptomycin by Dramamine	324
Trimble, Harold G. Coccidioidomycosis. Discussion by J. Winthrop Peabody	588
van Rensburg, M. See Dormer, B. A. et al.	407
Volini, Italo F., Elmer R. Kadison and Oscar Felsenfeld. New Antibiotics in the Treatment of Tuberculosis	19
Zimmerman, Henry A. A Study of the Pulmonary Circulation in Man	46
Zimmerman, Henry A. and Joe M. Ryan. Cor Pulmonale: A Report of an Additional 52 Cases Compared with a Previous Study of 50 Cases	286

DISEASES OF THE CHEST

SUBJECT INDEX

Volume XX, July - December, 1951

Abscess, Amebic, Pulmonary	84, 533
Lung	437
ACTH in Bronchial Asthma	575
Adenoma, Bronchial	347
Amebic Lung Abscess	84
Anesthesia in Lung Surgery	304
Aneurysm, Arteriovenous, of Lung	177
Antibiotics in Tuberculosis	19
Aortic Arch, Double	611
Aortic Deformity	35
Bacteriological Reports, False	277
Book Review: L'avviamento al lavoro del tubercoloso. Indirizzi di carattere medico-sociale. Controllo biologico e funzionale del soggetto. By Antonluigi Maccagno	452
Bronchial Adenoma	347
Bronchial Asthma and ACTH	575
Bronchiogenic Carcinoma	75
Bronchoscopy in Bronchial Adenoma	353
Cancer of Lung, Early Diagnosis by Cytologic Methods	237
Carcinoma, Bronchiogenic	75
Esophagus	290
Lung	257
Cardiovascular Abnormalities in Surveys	167
Chloroquine in Amebic Pulmonary Abscess	533
Chondromyxoid Fibroma of Rib	186
Circulation, Pulmonary	46
Citrus Peel Oil, Antibacterial Action on Tubercl Bacillus	671
Coarctation of Aorta	35
Coccidioidomycosis	588
Coronary Cripple, Surgical Rehabilitation	204
Cor Pulmonale	286
Cortisone in Experimental Tuberculosis	469
Cytologic Methods in Lung Cancer	237
Decortication, Pulmonary	97
Dramamine and Streptomycin, Toxic Effects	324
Empyema, Tuberculous, and Thiosemicarbazone	668
Endoscopic Approach to Vegetative Nervous System	139
Esophagus, Carcinoma	290
Fibroma of Rib	186

Fibrosis, Familial Pulmonary.....	426
Lungs	366
Funnel Chest, Cardio-Respiratory Studies.....	378
General Hospitals, Tuberculosis in.....	545, 551, 557, 564
Heart Disease, Reversible Forms.....	482
Valvular	453
Immobilizing Lung Chamber. Therapy in Chronic Pulmonary	
Tuberculosis	148
Jackson, Chevalier L., College President.....	215
Lung: Abscess	437
Carcinoma, Duration of Life	257
Disease, Silent. Exploration	111
Fibrosis	366
Surgery, Anesthesia	304
Meningitis, Tuberculous	194
Miliary Tuberculosis	194
Nervous System, Vegetative, Endoscopic Approach.....	139
Obituaries: Anderson, James Leroy.....	110
Anderson, Leslie Percival	345
Burt, Kenneth L.	108
Fariñas, Pedro L.	449
Gilbert, George Burton	451
Gleason, Michael	109
Gumprecht, Walter R.	346
Guntzer, Germaine A.	107
Hardie, Philip Weld	450
Heysett, Norman W.	574
Koppa, Thaddeus M.	110
Lande, Frank	108
Mac Dougall, John Maxwell	450
Parowski, Stephen Anthony	573
Ross, Will	572
Ryan, Maxwell Donnell	345
Schwarz, Joseph	574
Smart, Elliott Plummer	107
Occupational Therapy in Tuberculosis	210
Oedema, Acute Pulmonary	630
Oleothorax and Pulmonary Resection	501
Pneumonectomy in Children	642
Pneumonolysis, Extrapleural, with Plombage	651
Pneumoperitoneum and Spontaneous Pneumothorax	327
Pneumoperitoneum in Tuberculosis	520
Pneumothorax, Spontaneous, and Pneumoperitoneum	327
Pulmonary Amebic Abscess and Chloroquine	533
Pulmonary Circulation	46

Pulmonary Decortication	97
Pulmonary Resection, Oleothorax	501
Pulmonary Tuberculosis Simulating Diseases	277
Sponge, Plastic, in Treatment of Tuberculosis	134
Streptomycin, Dramamine	324
in Tuberculosis	392
Tuberculosis and Pregnancy	539
Surgical Rehabilitation for Coronary Cripple	204
Thiosemicarbazone Therapy in Tuberculous Empyema	668
Tiblone in Tuberculosis	1
Tracheobronchitis, Tuberculous	313
Tubercle Bacillus, Antibacterial Action of Citrus Peel Oil	671
Tuberculosis: Antibiotics	19
Cortisone in Guinea Pigs	469
in General Hospitals	545, 551, 557, 564
Giant Cavities	420
Immobilizing Lung Chamber Therapy	148
Miliary, Followed by Tuberculous Meningitis	194
Occupational Therapy	210
Plastic Sponge in Surgical Treatment	134
Pneumonectomy in Children	642
Pneumoperitoneum	520
Pneumothorax, Spontaneous, Complicating Pneumoperitoneum	
Therapy	327
Postural Rest	407
and Pregnancy	539
Streptomycin	392
Streptomycin in Pregnancy	539
Tiblone	1
Tuberculous Empyema and Thiosemicarbazone	668
Tuberculous Meningitis	194
X-ray Shadow, Diagnostic Study	24
X-ray Surveys, Cardiovascular Abnormalities	167

DISEASES
of the
CHEST



VOLUME XX

JULY - DECEMBER, 1951

DISEASES of the CHEST

OFFICIAL PUBLICATION
OF THE
AMERICAN COLLEGE OF CHEST PHYSICIANS

EDITORIAL BOARD

JAY ARTHUR MYERS, M.D., Chairman Minneapolis, Minnesota Editor-in-Chief	CHARLES M. HENDRICKS, M.D. El Paso, Texas Editor Emeritus
MILTON W. ANDERSON, M.D. Rochester, Minnesota	RICHARD H. OVERHOLT, M.D. Brookline, Massachusetts
ANDREW L. BANYAI, M.D. Milwaukee, Wisconsin	HENRY C. SWEANY, M.D. Jacksonville, Florida

ASSOCIATE EDITORS

ANTONIO A. ADAMES, M.D.	Holtville, California
WILLIAM B. BEAN, M.D.	Iowa City, Iowa
EDWARD P. EGLETT, M.D.	New York, New York
SEYMOUR M. FARBER, M.D.	San Francisco, California
EDWARD W. HAYES, M.D.	Monrovia, California
HANS H. HECHT, M.D.	Salt Lake City, Utah
PAUL H. HOLINGER, M.D.	Chicago, Illinois
CHEVALIER L. JACKSON, M.D.	Philadelphia, Pennsylvania
HOLLIS E. JOHNSON, M.D.	Nashville, Tennessee
ARTHUR M. MASTER, M.D.	New York, New York
EDGAR MAYER, M.D.	New York, New York
ALTON OCHSNER, M.D.	New Orleans, Louisiana
GEORGE G. ORNSTEIN, M.D.	New York, New York
J. WINTHROP PEABODY, M.D.	Washington, D. C.
ARTHUR Q. PENTA, M.D.	Schenectady, New York
LEO G. RIGLER, M.D.	Minneapolis, Minnesota

CORRESPONDING ASSOCIATE EDITORS

Donato G. Alarcon, M.D., Mexico	David P. Marais, M.D., South Africa
Adrian Anglin, M.D., Canada	Amadeo V. Mastellari, M.D., Panama
Jose Ignacio Baldo, M.D., Venezuela	Gustav Maurer, M.D., Switzerland
Etienne Bernard, M.D., France	Andre Meyer, M.D., France
Miguel Canizares, M.D., Philippine Is.	Papken S. Mugriditchian, M.D., Lebanon
Manoel de Abreu, M.D., Brazil	Antonio Navarrete, M.D., Cuba
Lopo de Carvalho, M.D., Portugal	Juda M. Pauzner, M.D., Israel
Sir Alexander Fleming, England	Hector Orrego Puelma, M.D., Chile
Ovidio Garcia Rosell, M.D., Peru	Raul F. Vaccarezza, M.D., Argentina
Fernando D. Gomez, M.D., Uruguay	Raman Viswanathan, M.D., India
Affonso MacDowell, M.D., Brazil	Harry W. Wunderly, M.D., Australia
Attilio Omodei Zorini, M.D., Italy	

EXECUTIVE OFFICE
112 East Chestnut Street, Chicago 11, Illinois
MURRAY KORNFELD, Managing Editor

Contents

Number 1, July, 1951

TIBIONE in the Treatment of Tuberculosis Activity, Dosage and Toxic Manifestations. <i>Samuel H. Belgorod, Hyman Alexander, Charles E. Meidt and John McGale</i>	1
New Antibiotics in the Treatment of Tuberculosis. <i>Italo F. Volini, Elmer R. Kadison and Oscar Felsenfeld</i>	19
Suggestions for the Diagnostic Study of a Patient with an Abnormal X-ray Shadow of the Chest. <i>John F. Briggs</i>	24
An Aortic Deformity Simulating Mediastinal Tumor: A Subclinical Form of Coarctation. <i>Carlton R. Souders, Carl M. Pearson and Herbert D. Adams</i>	35
A Study of the Pulmonary Circulation in Man. <i>Henry A. Zimmerman</i>	46
Bronchiogenic Carcinoma Masquerading as Other Diseases (A Review of 200 Cases). <i>J. K. Poppe</i> . Discussion by Ephraim Korol	75
Amebic Lung Abscess. <i>B. H. Sullivan, Jr. and Frederick N. Bailey</i>	84
Pulmonary Decortication. <i>Frank Bortone</i>	97
Philadelphia Postgraduate Course	102
College Chapter News	103
College News Notes	106
Obituaries: Germaine A. Guntzer, Elliott Plummer Smart	107
Frank Lande, Kenneth L. Burt	108
Michael Gleason	109
Thaddeus M. Koppa, James LeRoy Anderson	110

Number 2, August, 1951

The Value of Exploration in Silent Lung Disease. <i>Richard H. Overholt</i>	111
An Experimental Study of Plastic Synthetics in Thoracic Surgery. <i>Samuel Levine, John B. Grow, Allan Hurst and Harold M. Perlmutter</i>	126
The Use of Plastic Sponge in the Surgical Treatment of Pulmonary Tuberculosis. <i>Allan Hurst, John B. Grow, Samuel Levine and Harold Perlmutter</i>	134
The Endoscopic Approach to the Vegetative Nervous System and Its Therapeutic Possibilities. <i>E. Kux</i>	139
Clinical Results and Physiological Effects of Immobilizing Lung Chamber Therapy in Chronic Pulmonary Tuberculosis. <i>Alvan L. Barach, Chesmore Eastlake, Jr. and Gustav J. Beck</i> . Discussion by G. I. Bellis	148
Interesting Cardiovascular Abnormalities Discovered on Mass Chest Roentgen Surveys. <i>Hyman Alexander</i>	167

CONTENTS

Arteriovenous Aneurysm of the Lung. <i>H. E. Pugsley and R. M. Janes</i>	177
Chondromyxoid Fibroma of Rib. <i>Joseph Goorwitch</i>	186
Acute Generalized Hematogenous Tuberculosis (Miliary) Followed by Tuberculous Meningitis. <i>Moses J. Stone and William E. R. Greer</i>	194
A Surgical Rehabilitation for the Coronary Cripple. <i>Samuel Alcott Thompson</i>	204
What Should Occupational Therapy be in a Tuberculosis Setting. <i>Irene Grant</i>	210
Committee on Rehabilitation. <i>Allan Hurst, Chairman</i>	214
Dr. Chevalier L. Jackson Takes Office as College President	215
Seventeenth Annual Meeting of the College	218
College Chapter News	233

Number 3, September, 1951

The Early Diagnosis of Primary Lung Cancer by Cytologic Methods. <i>Seymour M. Farber, Allen K. McGrath, Jr., Mortimer A. Benioff and Lloyd W. Espen</i>	237
Carcinoma of the Lung: Duration of Life of Individuals not Treated Surgically. <i>Abraham Buchberg, Ruth Lubliner and Eli H. Rubin.</i> Discussions by Ralph H. Adams, Alfred Goldman and F. M. Feld- man. Closing Discussion by Eli H. Rubin	257
False Positive Bacteriological Reports in Diseases Simulating Pul- monary Tuberculosis. <i>Donald Steinberg, and George Schwartz</i>	277
Cor Pulmonale: A Report of an Additional 52 Cases Compared with a Previous Study of 50 Cases. <i>Henry A. Zimmerman and Joe M. Ryan</i>	286
Diagnosis and Treatment of Carcinoma of the Esophagus. <i>Philip Thorek</i>	290
A Simple Method for Differential Block-Inflation in Anesthesia for Lung Surgery. <i>Salomon Albert</i>	304
Tuberculous Tracheobronchitis. <i>J. E. Hiltz, D. M. MacRae and J. J. Quinlan</i>	313
Further Studies on the Control of Vestibular Toxic Effects of Strep- tomycin by Dramamine. <i>L. L. Titche and Andrew Nady</i>	324
Spontaneous Pneumothorax Due to Diaphragmatic Defect Compli- cating Pneumoperitoneum Therapy. <i>Isaac Epstein</i>	327
Editorial	333
Seventeenth Annual Meeting of the College	335
College Chapter News	342
College News Notes	344
Obituaries: Leslie Percival Anderson; Maxwell Donnell Ryan	345
Walter R. Gumprecht	346

CONTENTS

Number 4, October, 1951

Bronchial Adenoma: Follow-up Report After 35 Years. <i>Chevalier Jackson</i>	347
The Role of Bronchoscopy in the Diagnosis and Treatment of Bronchial Adenoma. <i>Chevalier L. Jackson and Charles M. Norris</i> . Discussion by Paul H. Holinger	353
Diffuse Interstitial Fibrosis of the Lungs. <i>Harry L. Katz and Oscar Auerbach</i>	366
Cardio-Respiratory Studies in Pre and Post Operative Funnel Chest (Pectus Excavatum). <i>A Lincoln Brown and Orrin Cook</i>	378
Streptomycin as an Adjunct to the Therapy of Pulmonary Tuberculosis. <i>K. Albert Harden, Howard M. Payne, Herbert V. McKnight and Norbert P. Gillem</i>	392
Postural Rest in Pulmonary Tuberculosis. <i>B. A. Dormer, Elizabeth Greathead, Gordon Pirrie, P. Smit, T. Randall and M. van Rensburg</i>	407
The Treatment of Giant Tuberculous Cavities. <i>Poul Ottosen, Carol Popp, Arch J. Beatty and William W. Buckingham</i>	420
Familial Pulmonary Fibrosis. <i>John M. MacMillan</i>	426
Medical Treatment of Abscess of the Lungs. Prof. Dr. Tevfik Saglam. Discussion by Lee Ogden	437
College Interim Session, Los Angeles, California	442
Committee Reports, Seventeenth Annual Meeting	443
Postgraduate Courses to be Held	445
College Chapter News	446
Obituaries: Pedro L. Farfias	449
John Maxwell MacDougall; Philip Weld Hardie	450
George Burton Gilbert	451
Book Review	452

Number 5, November, 1951

The Surgery of Valvular Heart Disease. <i>Charles P. Bailey, Robert P. Glover and Thomas J. E. O'Neill</i>	453
The Influence of Cortisone on Experimental Tuberculosis of Guinea Pigs. <i>Alfred G. Karlson and Joseph H. Gainer</i>	469
Reversible Forms of Heart Disease. <i>John F. Briggs</i> . Discussion by Arlie R. Barnes	482
Oleothorax Following Pulmonary Resection. <i>Neil C. Andrews, Douglas R. Morton, George M. Curtis and Karl P. Klassen</i> . Discussion by Donald L. Paulson	501
Artificial Pneumoperitoneum in the Treatment of Pulmonary Tuberculosis. <i>John L. Elliott and Emil Blair</i>	520

CONTENTS

Treatment of Unusual Pulmonary Amebic Abscess with Chloroquine. <i>Alan E. Lindsay, Wayne H. Gossard and John S. Chapman</i>	533
The Use of Streptomycin in Tuberculosis and Pregnancy. Case Report. <i>Abel Froman</i>	539
Report of the Council of Tuberculosis Committees	544
Tuberculosis in General Hospitals. Need for a Control Program. <i>Sydney Jacobs</i>	545
The Tuberculosis Patient in the General Hospital. <i>James S. Edlin, Sydney Bassin and Alfred A. Richman</i>	551
The Practical Use of an Isolation Ward in a General Hospital for the Treatment of Tuberculosis. <i>Robert E. Neff</i>	557
Editorial	564
College Interim Session	569
Chicago Postgraduate Course	569
College Chapter News	570
College News Notes	571
Obituaries: Will Ross Stephen Anthony Parowski Joseph Schwarz; Norman W. Heysett	572 573 574

Number 6, December, 1951

Intravenous ACTH Therapy in the Treatment of Bronchial Asthma. <i>Maurice S. Segal and J. Aaron Herschfus</i>	575
Coccidioidomycosis (A Review). <i>Harold Guyon Trimble</i> . Discussion by <i>J. Winthrop Peabody</i>	588
Double Aortic Arch. <i>Clifford F. Storey and J. W. Crittenden</i>	611
Acute Pulmonary Oedema, Endogenous and Exogenous Causes, with Therapy. <i>Elston L. Belknap</i>	630
Pneumonectomy in the Treatment of Tuberculosis in Children. <i>Gabriel M. Botelho, Alberto Chapchap, Horacio L. G. Pereira and Osvaldo V. Cordeiro</i>	642
Late Complications of Extrapleural Pneumonolysis with Plombage. <i>Joseph Goorwitch</i>	651
Local Thiosemicarbazone Therapy in Tuberculous Empyema. <i>M. R. Lichtenstein</i>	668
The Antibacterial Action of Citrus Peel Oil on the Tubercle Bacillus in Vitro. <i>Benjamin L. Brock and Helen M. Ketchum</i>	671
Plans Completed for Important World Congress	675
College Chapter News	681
College News Notes	683
Author Index, July-December, 1951	685
Subject Index, July-December, 1951	690